

Pest Patrol

Action Kit

Summary:

Observation and monitoring are essential components of IPM. Students closely observe and inspect purchased convergent ladybugs, noting their reactions to stimuli and recording observations and further questions before releasing them outdoors. (Plentiful in fall, Asian lady beetles may also be gathered from outdoors or home and observed for comparison.)

Materials:

- Live ladybugs purchased with voucher in kit. *Allow approximately one week from date of mailing your voucher.*
- Tips: How to Care for Live Ladybugs
- Video/CD "Putting Ladybugs to Work". *This child-narrated 7-minute video acquaints students with ladybugs and their important work.*
- Teacher Guide for Video Viewing (and video script)
- Hand lenses
- Bug magnifying jars
- Insects: A Golden Guide*
- Journal for observations

Optional Materials:

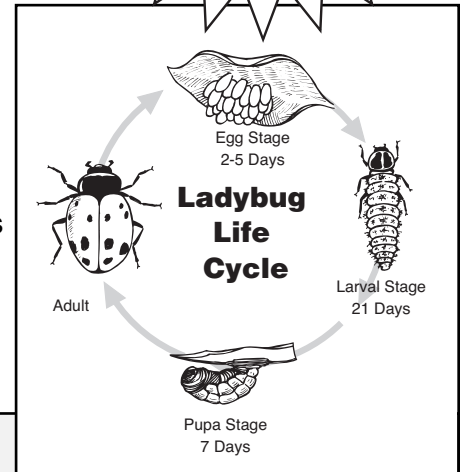
- Food bits (scrambled eggs, Sprite, cooked rice, crumbled dog food, luncheon meat, Kool Aid, flour, etc.)
- Asian lady beetles captured by children at home and brought in for comparison (Follow same tips for ladybug care.)

Looking at Ladybugs

Do this activity in **AUTUMN** before cold weather sets in, or in **SPRING** when it's warm.

Observing Like a Scientist

Ladybugs, ladybird beetles, lady-beetles: all refer to the harmless insect so familiar to us all. But are all ladybugs alike? Curious kids (and their teachers) have a million delightful questions about ladybugs. Get some answers from the ladybugs themselves! While students observe insect movements and reactions, they are learning to do what scientists do.



Getting Ready...

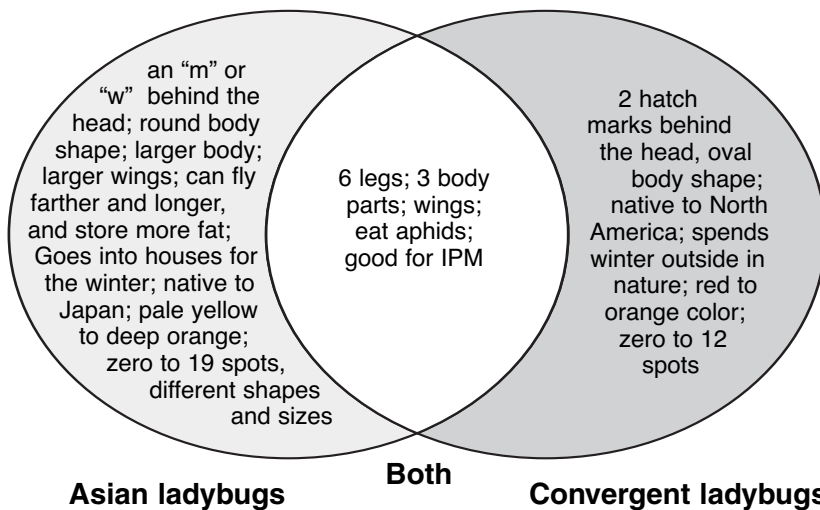
1. Use your voucher to order live ladybugs and plan to observe the ladybugs within two days after acquiring them. They will live only a few days, and their behavior will change over time since it is difficult to supply a proper diet.
2. Divide your ladybugs into the bug magnifying jars in advance for pairs or small groups of children to observe. These adult beetles may be agitated or readily take flight, since they are searching for more food and space. Escapes are likely when the lid is removed to gather ladybugs for the lesson. You can place the container in a refrigerator for 10-20 minutes to slow down the ladybugs if they are agitated. Tip the container and tap it to gather a few ladybugs at a time for each bug magnifying jar.
3. Show children how to handle the ladybugs to avoid harming them. If a ladybug escapes onto the table, gently flick with a finger to put the ladybug on its back. Let it grab onto your finger and then flick it back into the jar. Gently hold the beetles between the thumb and forefinger. They can easily be squeezed to death, but they will warn you when you have gone too far by secreting an amber fluid. (This is a defensive move so predators will not find them tasty.) Students should wash hands of any ladybug fluids and avoid touching their eyes until after hand washing.

Guiding the Activity

1. Watch the video/CD "Putting Ladybugs to Work" to prepare for the arrival of your live ladybugs. Use your judgment about dividing the ladybugs among the children, and share Tips: How to Care for Live Ladybugs.
2. Brainstorm and list students' questions. They may wonder: *How long do ladybugs live? What do they eat? How do their mouths work? Can they fly? Are they insects, and how do we know? How many spots do they have? What will they do if we touch them? What do they do in darkness? What other stimuli could we test on the ladybugs? Will they eat each other? Can they fly?* (Remember: Teachers don't have to know the answers; this is what scientists do. Your class will be able to answer some of the questions as you observe and search for answers.)

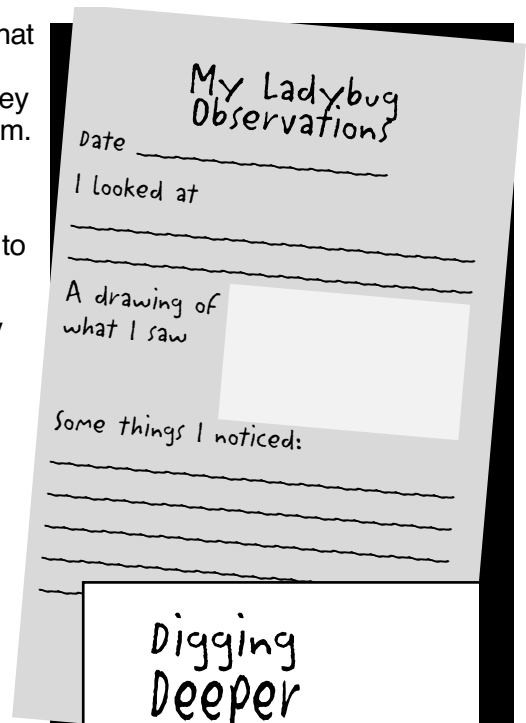
- Explain that students will be scientists observing the ladybugs to see what answers they can find, and what new questions they raise. Tell children they will use the bug jars and hand lenses to see subtle differences. They will be making some notes about ladybug behavior as they observe them. They should look closely so they can make good drawings. Have students prepare observation sheets in their journals.
- Distribute the hand lenses and live ladybugs in the bug magnifying jars to pairs of students.
- Allow time for observations. Let children's curiosity lead them; they may wish to test several different stimuli.
 - Make food bits available for students who want to observe their ladybugs eating.
 - If you have access to a refrigerator, children can observe what happens after the ladybugs spend 30–60 minutes in cool temperatures. (Assist them to use a large number of ladybugs together in a container and you can expect to see the ladybugs cluster together, just as they do during winter hibernation.)
 - Some students may want to compare the convergent ladybugs with the common multicolored Asian ladybugs so abundant in fall. Work together to create a Venn diagram. Here's ours:

Comparing Asian ladybugs to convergent ladybugs



- Come together for discussion. Revisit students' list of questions. Which questions were answered? What new questions do they have? How might they find the answers to their questions?
- After completing observations, be sure to include **release** as part of this activity. Remember the surplus ladybugs, too! Remove the lids of all containers and the ladybugs will leave. Remind students of the ladybug's life cycle. If it's fall, these ladybugs may fly away to find shelter to overwinter. If it's spring, they may find places to lay eggs.

If your ladybugs come in a container with shredded wood, you can separate the wood bits (with their clinging ladybugs) so teams of students can release them in different locations of the schoolyard or garden. In IPM, it's important that people communicate with each other so others know what's being released, and when. How will your students communicate their ladybug releases?



Digging Deeper



Purchase a commercial ladybug lure in the hopes that it will attract ladybugs from your area. Track and record results of using the lures in different seasons and weather conditions.

Bulletin Board IDEAS

Add children's observation sheets, drawings, or their descriptive writing paragraphs about what ladybugs look like or how they behave.

Did You know?

- Heat and light activates ladybugs. Farmers release them in cool early mornings or at night for IPM so ladybugs are more likely to stay on the plant.

Minnesota Graduation Standards, Grade 3

History and Nature of Science:
 A. Scientific World View;
 B. Scientific Inquiry.

Life Science: B. Diversity of Organisms.

Writing: A. Types of Writing.

