

Ladybugs

Story length 3 minutes

QUEST SUBJECTS

Life Science **Biology**
Health
Environment

Earth Science Geology
Weather
Astronomy

Physical Science Physics
Chemistry
Engineering

CA SCIENCE STANDARDS

Grade K

Life Sciences

2. Different types of plants and animals inhabit the earth. (a,c)

Grade 1

Life Sciences

2. Plants and animals meet their needs in different ways. (a,b)

Grade 2

Life Sciences

2. Plants and animals have predictable life cycles. (a,b)

Grade 3

Life Sciences

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. (b, d)

Grade 4

Life Sciences

2. All organisms need energy and matter to live and grow. (b)

3. Living organisms depend on one another and on their environment for survival. (b)

Grade 6

Ecology

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. (b, c, e)

PROGRAM NOTES

Ladybug, ladybug, fly away home! Each year, ladybugs fly in by the millions to winter in the East Bay's Redwood Regional Park. We meet naturalist Linda Yemoto, who explains this phenomenon and other ladybug facts. Scientists don't know everything about ladybugs. How these beetles know where to go is still one of nature's mysteries.



In this story you will find...

- ⦿ why ladybugs gather together in the winter.
- ⦿ what ladybugs and their larvae eat.
- ⦿ what to do if you see a cluster of ladybugs.

TOPIC BACKGROUND

Ladybugs, also known as ladybird beetles, have a life cycle of four to six weeks. In one year as many as six generations of ladybird beetles may hatch.

In the spring, each adult female lays up to 300 yellow eggs in small clusters on plants where aphids are present. After a week the wingless larvae hatch. At this stage, the black larvae marked with orange or white are prey for lacewing larvae. The ladybug larvae molt three times before pupating. During the pupa stage, the larvae attach to leaves, stems or rocks and go through metamorphosis, turning into adult ladybugs. About a week later, and before the wings have fully hardened, the yellow adult ladybugs emerge. It takes another 24 hours for their familiar spots to appear.

Both the ladybird beetle larvae and adults are active predators, eating only aphids, scales, mites and other plant-eating insects. The ladybugs live on the vegetation where their prey is found, which includes roses, oleander, milkweed and broccoli. Adult ladybugs don't taste very good. A bird careless enough to try to eat one will not swallow it.



By late May to early June, when the larvae have depleted the food supply, the adults migrate to the mountains. There, they eat mainly pollen. The ladybugs gain fat from eating the pollen and this tides them over their nine-month hibernation. Thousands of adults overwinter in tight clusters, called aggregates, under fallen leaves and ground litter near streams. In the clear, warmer days of early spring, the ladybugs break up the aggregates and begin several days of mating.

The temperature must reach at least 55°F for the beetles to fly. On a windless day they will begin their return migration back to the valleys and fields. As the temperature drops late in the day, the ladybugs return to the valleys to lay their eggs and die, beginning a new cycle of life.

Wintering colonies of ladybird beetles can be found along the Stream Trail at Redwood Regional Park in Oakland.

Media Enhance Education

Video and audio can be powerful tools for meaningful learning. It all depends on you, the educator. The key to using media effectively is preparation. Make the most of learning opportunities by encouraging students to become active viewers and listeners. Pick and choose from the suggested questions and activities to offer an engaging media experience.

Questioning

Oftentimes, teachers and students become frustrated during a media segment when students can't find the answers to a long list of questions. Provide a limited number of questions or topics for students. This focuses their attention during a media segment, helps to keep them engaged and generally results in higher quality answers. QUEST Ed. has provided a number of options for focus questions ranging from fact based to opinions, as well as "big picture" ideas.

PRE - VIEWING

- What does a ladybug look like? What does it eat?
- Has a ladybug ever landed on you? Have you ever seen a big group of ladybugs?
- What types of animals can you think of that hibernate or change their behavior for the winter?
- Read **The Grouchy Ladybug** together as a class. Using a large clock with movable hands, have students take turns moving the hands to match the times when actions happen in the book.

VIEWING FOCUS

NOTE: You may choose to watch the story twice with your students: once to elicit emotional responses and to get an overview of the topic and again to focus on facts and draw out opinions.

- Listen for one new thing you did not already know about ladybugs.
- Where is Linda Yemoto?
- What is the big mystery (what are scientists still trying to figure out) about where ladybugs spend the winter?

POST- VIEWING – Links to activities mentioned here can be found on the following page.

- **Review** students' answers to the Viewing Focus Questions.
- **Imagine** you are the first person to discover ladybugs and you have to give them a name. What would you call them? Why?
- **Role play** a ladybug egg-laying drama in Activity 3 of the GEMS Ladybugs curriculum.
- **Construct** large ladybugs out of paper plates. Mark with different numbers of spots. Use these ladybugs in math activities.
- **Read** the book **Are You a Ladybug?** to find out more about the life cycle of ladybugs.

DID YOU KNOW?

A female ladybug will lay over 1,000 eggs in her lifetime.

The spots on a ladybug fade as the ladybug gets older.

LESSON PLANS / ACTIVITIES



Great Explorations in Math and Science (GEMS) Guide: Ladybugs Lawrence Hall of Science

<http://www.lhs.berkeley.edu/gems/GEM090.html>

- In a series of observational and role-playing activities, children learn about ladybug body structure, life cycle, defensive behavior and favorite foods. (Grades pre-K–1)



Aphid Eater Lawrence Hall of Science

<http://sv.berkeley.edu/showcase/flash/ladybug.html>

- Learn about the ladybug life cycle and help save a rose bush in this simple online activity.

Ladybug Quiz County of Santa Clara Parks and Recreation Department

<http://www.sccgov.org> (type “ladybug quiz” into search field)

- Score yourself on ladybug facts.

CHILDREN'S LITERATURE

The Grouchy Ladybug Eric Carle

Harper & Row, New York, 1986

- The grouchy ladybug challenges all the animals it meets to a fight so it can have all the aphids on a leaf.

Ladybug, Ladybug Ruth Brown

E.P. Dutton, New York, 1989

- A ladybug flies home to find her children safely sleeping in this story based on the familiar nursery rhyme.

Are You a Ladybug? Judy Allen and Tuder Humphries

Kingfisher Books, New York, 2000

- This book describes the beginning of life and the necessary behaviors for ladybug growth and survival.

Face to Face with the Ladybug Valerie Tracqui

Charlesbridge Publishing, Watertown, MA, 2002

- The informational text is illustrated with photographs that show the smallest details of the ladybug's structure. The description of ladybug metamorphosis provides a good example of a life cycle.

Look for the



indicating resources from QUEST partner organizations

QUEST QUAD

FIELD NOTES




Go outside and ...

- ⦿ Observe a ladybug and describe
 - the plant the ladybug is on.
 - the types of movement the ladybug makes in a two-minute time frame.
 - the number of ladybugs nearby.
 - other insects that are close to the ladybug.
- ⦿ Use a magnifying glass or magnifying bug box to look at a ladybug up close and sketch it.
 - How many spots do you count?
 - Can you see its feet, antennae and second pair of wings?

FIELD TRIP



Visit ...

- ⦿ **The East Bay Regional Park District** 
<http://www.ebparks.org/>
 - Go on a hike at Redwood Regional Park and look for ladybugs.
 - Remember to leave the ladybugs alone (they are resting for winter) and just observe them from a distance.
- ⦿ **The San Francisco Botanical Garden at Strybing Arboretum**
www.sfbotanicalgarden.org
 - Tour the habitats and look for ladybugs.
 - Visit the Helen Crocker Russell Library of Horticulture for story time on March 4 and 18 at 10:30 a.m. featuring the theme “Garden Creatures Great and Small.”
<http://www.sfbotanicalgarden.org/library/page6.html#storytime>

FIELD RESEARCH



Find out more about...

- ⦿ Other animals that migrate or hibernate for the winter.
 - Where do other animals go for the winter?
 - Why do animals change location during the winter?
 - What other animals hibernate? Why?
 - What happens to an animal when it hibernates?
 - How long do animals hibernate?
- ⦿ The natural history of a ladybug from a different region in the world.
 - There are over 5,000 types of ladybugs worldwide. Choose two and list the similarities and differences between them.

FIELD TEST



Experiment with...

- ⦿ Making a ladybug house for your garden.
 - Research different types of materials for making your house. Try various shapes.
 - Build your house with windows or doors so the ladybugs can come and go.
 - Be sure to stock your ladybug house with plenty of aphids and provide a water source to keep them coming back.
- ⦿ Planting plants that attract ladybugs
 - Try umbrella-shaped flowers, such as fennel, dill, cilantro, caraway or wild carrot. Other plants that attract ladybugs include cosmos (especially white ones), coreopsis, scented geraniums and dandelions.

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