



Marvelous Metamorphosis

3rd Grade

Duration

Museum Visit:
20-30 minutes

Location

Nature Gardens:
Edible or Pollinator Garden

Supplies

- Complete Metamorphosis Diagram
- Worksheet
- Pencil
- Clipboard (optional)

Standards

[NGSS 3-LS1-1.B](#)

Photos are courtesy
[Gilles Sans Martin](#):
www.flickr.com/photos/sanmartin/

Worksheet Drawings of
Harmonia axyridis by
Andrea Lofthouse-
Quesada

Concepts

- Some insects grow through a unique life cycle called complete metamorphosis.
- Complete metamorphosis has four distinct stages: egg, larva, pupa and adult.
- Beetles, such as ladybugs, are one kind of insect that grows through complete metamorphosis.

Objectives

- Students will know that complete metamorphosis is how some kinds of insects grow and develop.
- Students will be able to articulate the four stages of complete metamorphosis.
- Students will look for and identify the stages of ladybug complete metamorphosis.

Outline

1. At the Museum introduce complete metamorphosis and its four stages: egg, larva, pupa and adult.
2. In the Nature Gardens, distribute the worksheet and ask students to look for the different stages of ladybug complete metamorphosis.
3. Re-group students to see what they found and help students who are missing stages find them. Back on the bus or at the classroom, ask students to try and remember all four stages of complete metamorphosis.

Museum Visit

Gather students in the Garden and explain that we are going to explore how some insects grow. Some insects like butterflies and moths, wasps, ants, bees and beetles grow through a life cycle called *complete metamorphosis*. This means there are four distinct stages in its life, and an insect in one stage often looks and behaves differently than it does in another! Show students the *Generalized Complete Metamorphosis* diagram and quickly go through each stage:

- First the insect is an egg; this is the ‘baby’. They stay in one place and grow.
- Next the egg hatches and out comes a larva. The larva is a ‘kid’ stage, it usually moves around and eats a lot (if you were a bug, you would be a larva right now)!
- Then the larva becomes a pupa. Pupas are the ‘teenage’ stage, they rest a lot.
- Finally, out of the pupa emerges an adult. Adults mate and lay eggs, starting the cycle again!

Teachers Note: This diagram only depicts the four distinct stages of complete metamorphosis and represents a generic bug. Each species of insect has different looking eggs, larva, pupa and adult stages.

Have students say each stage out-loud with you: Egg! Larva! Pupa! Adult! Introduce the activity: Today we are looking for ladybugs (a kind of beetle) to see if we can find the different stages of complete metamorphosis. Hold up a worksheet to review what each stage looks like for a ladybug, pointing out key features to help students recognize each stage in the garden.



Eggs: Ladybug eggs are small, long/oblong and usually yellow. Look on and under leaves and in protected areas. When you find eggs, see who is nearby - ladybugs like to lay eggs near bugs like aphids, scale insects and mites. *See why below!*



Larva: Ladybug larva need to eat when they hatch, and most ladybug larva food are other bugs, often ones that eat plants. Larva can crawl around to reach their food, so look for a long, spiny bug that is pointy at the rear and has six legs near the head.



Pupa: Ladybugs also usually pupate (become pupa) on leaves. Some ways to tell them apart from larva is that they don't have legs because they are anchored to the plant, and they look rounded like bulbs.



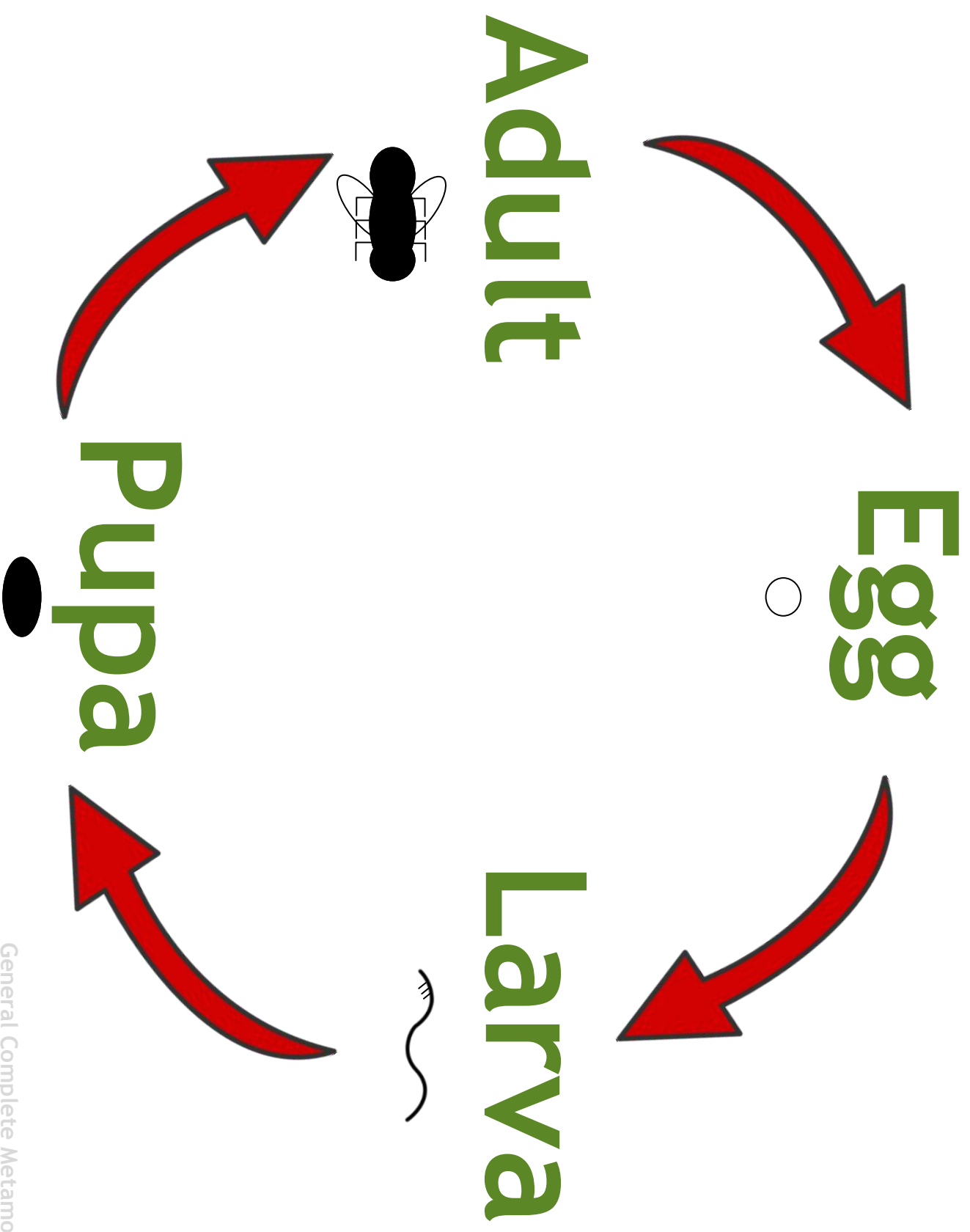
Adult: When the pupa molts (sheds) it emerges as an adult ladybug!

Pass out worksheets and remind students the garden is a home, so be respectful and stay on the path and touch plants gently so we don't hurt them or animals living on them. Explore with students for 10-15 minutes, then call everyone together and review what has been found. Spend a couple more minutes to focus on finding missing stages (it is helpful to pair students who are missing stages with those who have already found them). Back in the classroom, ask students to name all four stages back to you.

Variations & Extensions

- Note the date, time, location and weather on worksheets (or transfer to a notebook/journal) and repeat the activity at different locations or times of the year. Have students (in teams or solo) analyze their findings. Did they find more or fewer specimens in each stage? Why might that be? See: [NGSS: 3-LS4-4; Secondary LS2.C](#)
- Look for butterfly and moth life stages and compare and contrast the different stages using a science notebook or nature journal.

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Look for Ladybugs!

Put a tally mark next to the pictures below to record how many ladybugs in each stage you find. Be careful not to count the same ladybug twice!

