



Cocoon Challenge

Materials:

Toilet paper & stopwatch

Objectives:

Students will be able to:

- Identify the stages in incomplete and complete metamorphosis
- Identify the type of metamorphosis involved in the life cycle of common insects
- Describe the differences between moths and butterflies

Background:

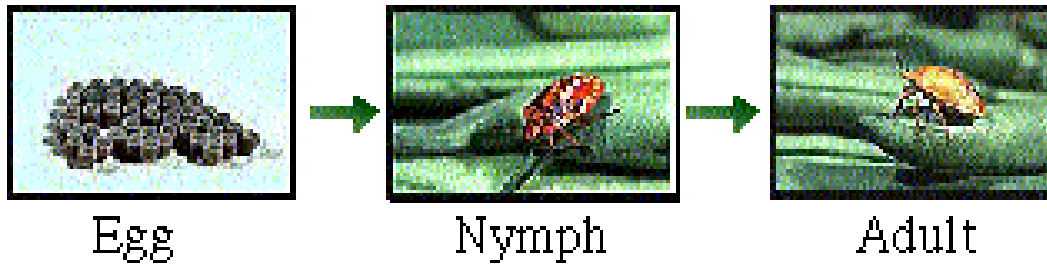
Insects change throughout their lifetime from an egg to an adult. Some insects go through incomplete metamorphosis, which means they have three main stages – egg → nymph → adult. Other insects have complete metamorphosis with four main stages – egg → larva → pupa → adult. (Diagram Page 1)

Butterflies and moths are different in several ways. Butterflies have antennae that are knobbed, while moths have antennae that are feathery. Butterflies tend to have slender bodies, while moths have thicker ones. Butterflies also tend to be more colorful than moths. Another main difference is in the pupal stage, when the larva transforms itself into an adult. A butterfly tends to create a pupa that consists of a hard shell, called a chrysalis. Many moths create a softer, cotton-like pupa called a cocoon. (Diagram Page 2)

Challenge:

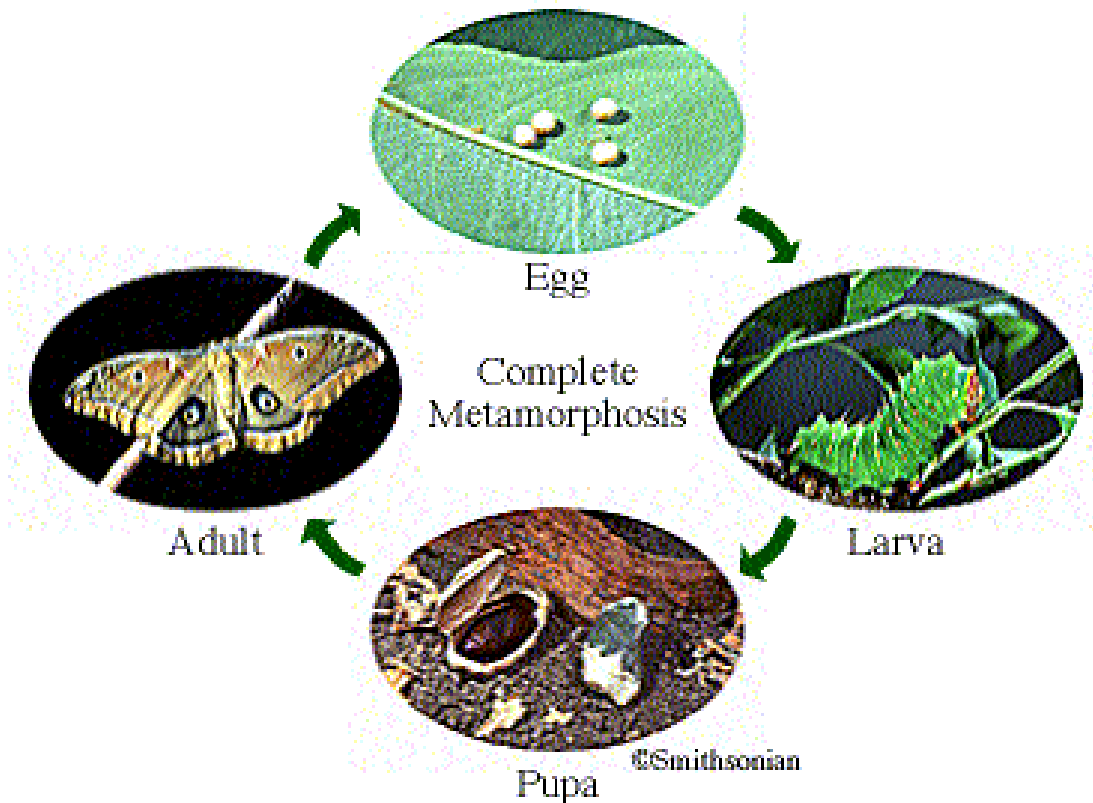
- 1 - Divide the students into teams of 3-4 people.
- 2 - Select one person to be the larva and the others will be responsible for creating a cocoon by wrapping that person in toilet paper. Teams will be allowed 2 minutes to create their cocoons and the team with the best cocoon will be the winner.
- 3 - Give each team one roll of toilet paper. When everyone is ready, say “Go” and start the timer. After two minutes, have the teams put down their rolls of toilet paper.
- 4 – Determine the winner of the challenge and award prizes to the members of that team.

Incomplete Metamorphosis



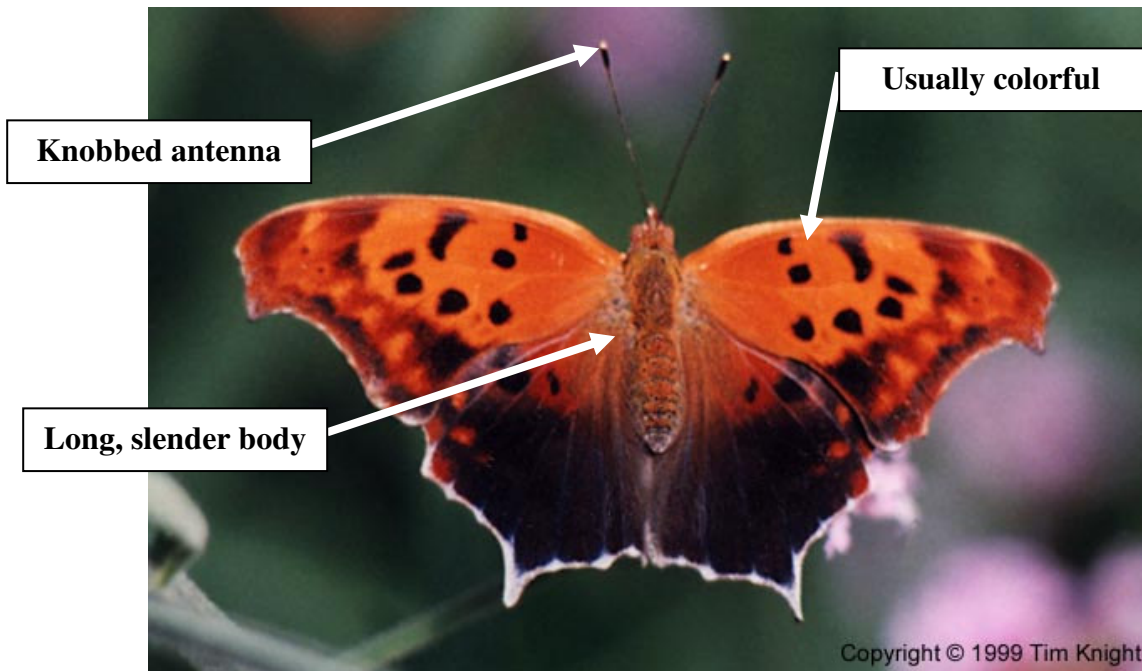
Insects with incomplete metamorphosis include grasshoppers, crickets, dragonflies, walking sticks, and Praying Mantis.

Complete Metamorphosis

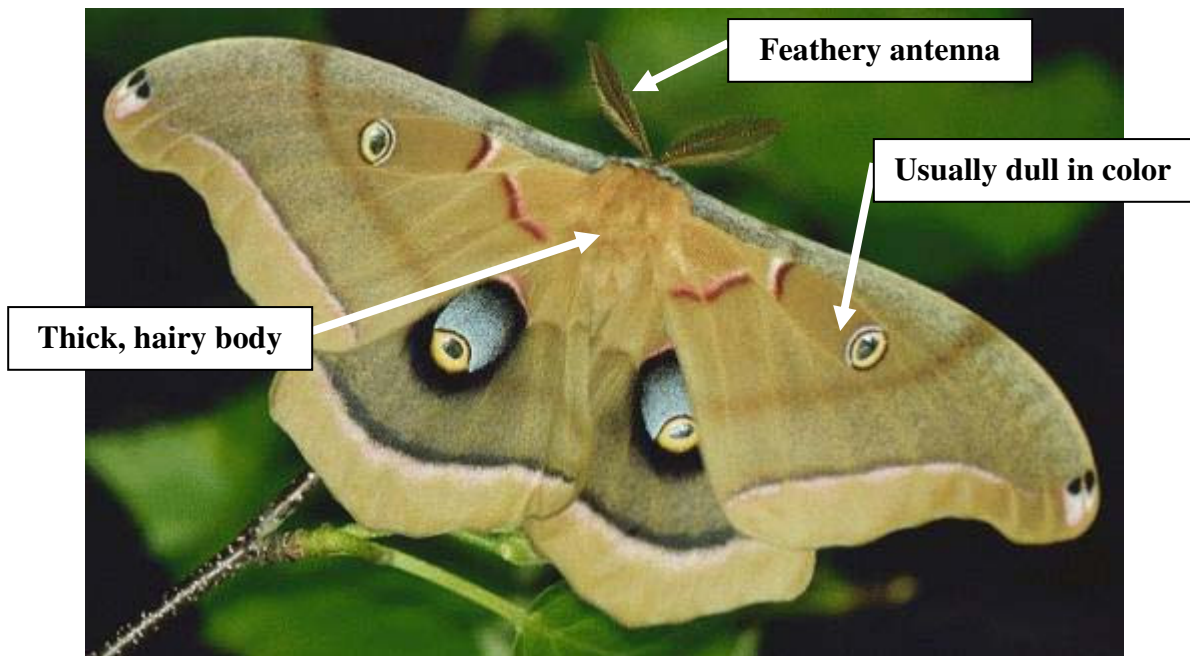


Insects with complete metamorphosis include butterflies, moths, bees, beetles, flies, and mosquitoes.

Butterflies vs. Moths



Butterflies also rest with their wings up or closed, are often more active during the day, and create a hard-shelled pupa called a chrysalis.



Moths rest with their wings down or flat, are often more active at night, and create a soft, cotton-like pupa called a cocoon.

