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Lonny Nelson
lonny@adventsource.org
402-802-8131

INSTRUCTOR BOOK

Taxonomy

	Scientific Name	Common Name	Characteristics
Kingdom	*Animalia*	Animals	- have multiple cells - eat other organisms - cells have nucleus - no cell walls - motile in 1+ stage of life
Phylum	*Arthropoda*	Arthropods	- invertebrate (no backbone) - have exoskeleton - have segmented body - have jointed legs
Class	*Insecta*	Insects	- have 3 body segments - have 3 pairs of legs - have compound eyes - have 2 antennae
Order	*Lepidoptera*	Moths and Butterflies	- 4 stage life cycle Adults: - have 2 scaly wings - have pair of simple eyes above compound eyes - have straw-like tongue Larvae: - caterpillars - have chewing mouthparts - have 6 legs on thorax - have unsegmented legs on abdomen

										Pic #
										Name
										Time Of Day

Photograph 20 species of moths and butterflies.
Write down the following information for each picture:

Pic #	Name	Time Of Day

Fill In the Differences Between:

Moths	Butterflies
Antennae are: Comb like or Feathery	Thin & Club Shaped
Cocoons are made of: Silk	Exposed Pupae
Color is mainly: Brown Black, Grey, or White	Bright Colors
Active most during the: Night (Nocturnal)	Day (Diurnal)
Wing Position at rest: Spread	Fold

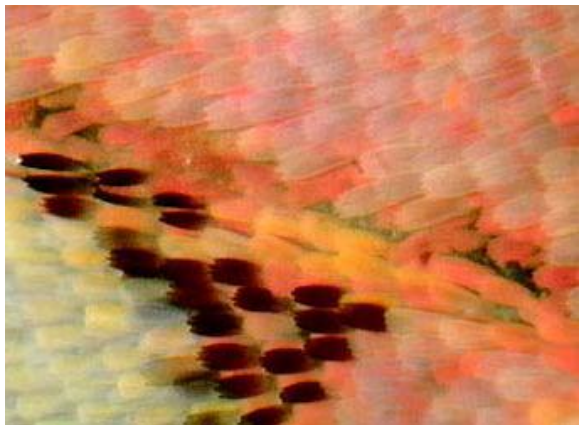
Cocoon Identification

In the Butterfly Pavilion there is a display of cocoons. Please be able to identify three moths and/or butterflies by their cocoons.

Migration

The species of butterfly to migrate the longest distance is the Monarch Butterfly. It spends spring, summer and early autumn in Canada and the northern United States. It then migrates south 2000 miles to California, Florida, and Mexico for winter.

Wing Powder



The wings of moths and butterflies are covered in tiny scales. They serve to protect the wings clear membrane, kind of like shingles on a roof of a house. They also give the moths and butterflies their colors. Each scale is a different color, and help to form visual patterns on the wings. When you touch a moth or butterfly, a number of scales come off in the form of dust.

These are some pictures of what the scales look like under a microscope.

Glossary

Antennae

Antennae are paired appendages connected to the front-most segments of an insect.

Cocoon

A cocoon is a casing spun of silk by many moth caterpillars and numerous other insect larvae as a protective covering for the pupa.

Pupa

A pupa is the life stage of some insects undergoing transformation.

Larva

A larva is a juvenile form of animal with indirect development, undergoing metamorphosis and looks completely different from adults.

Chrysalis

A chrysalis or nympha is the pupal stage of butterflies. Because chrysalids are often showy and are formed in the open they are the most familiar examples of pupae.

Life Cycle

I hatched from an egg that was stuck to an object near my main food source while I'm a larvae. As a "child," I was called a caterpillar, though some humans thought I looked like a worm. I ate a lot and grew very fast, so I had to shed my skin several times. Once I was ready, I formed a cocoon around myself. While I was inside it, my tissues from when I was a larva were broken down and my adult structures formed. Finally, I broke through the chrysalis and appeared as an Imago (adult). As an adult, I am going to mate and lay many eggs before I die, so the cycle will start all over again.

Fill in the blanks:

1. _____

2. _____

(Caterpillars)

3. _____ (Chrysalis)

4. _____

As a group read out loud about three harmful tree moths and one harmful house moth and tell during what stage of their lives they each do their damage.

Gypsy Moth

The gypsy moth was introduced into the United States in 1868 by a French scientist, Leopold Trouvelot, living in New Bedford, Massachusetts. The native silk spinning caterpillars were proving to be susceptible to disease. So Trouvelot brought over gypsy moth eggs to try to make a caterpillar hybrid, that could resist diseases. When some of the moths escaped from his lab, they started to multiply. They eventually grew to be gypsy moths as we know them today. It is now one of the most notorious pests of hardwood trees in the Eastern United States.

Since 1980, the gypsy moth has defoliated over 1,000,000 acres (4,000 km²) of forest each year. Gypsy moth populations usually remain at very low levels but occasionally populations increase to very high levels which can result in partial to total defoliation of host trees for 1-3 years.

Gypsy moths eat only during their larval stage.

Tent caterpillar

"Tent Caterpillars" are moderately sized species in the genus *Malacosoma* in the moth family *Lasiocampidae*. Species occur in North America and Eurasia. Twenty-six species have been described, six of which occur in North America. Although most people consider tent caterpillars only as pests due to their habit of defoliating trees, they are among the most social of all caterpillars and exhibit many noteworthy behaviors.

Tent caterpillars are readily recognized because they are social, colorful, diurnal and build conspicuous silk tents in the branches of host trees. Some species, such as the eastern tent caterpillar, Malacosoma americanum, build a single large tent which is typically occupied through the whole of the larval stage while others build a series of small tents that are sequentially abandoned. The forest tent caterpillar, Malacosoma disstrium, is exceptional in that the larvae build no tent at all, aggregating instead on silken mats that they spin on the leaves or bark of trees. Tents facilitate aggregation and serve as focal sites of thermal regulatory behavior. They also serve as communication centers where caterpillars are alerted to the discovery of new food finds.

Lesser wax moth

Wax moths were first seen in North America in 1806. People believe they came over with honeybees from Europe. The lesser wax moth is very common all over the world, except the colder regions. The larvae are the only ones that eat, the adults will not eat.

Their diet typically consists of honey, beeswax, stored pollen, bee shell casings, and, in some cases, bee brood. While tunneling through honeycombs attaining food, these moths are also protecting themselves from their main enemy, the honeybee.

White-shouldered Moth

The White Shouldered House Moth (*Endrosis sarcitrella*) is a very common moth and occurs regularly inside buildings, and being continuously-brooded, can be found at any time of year, mainly found indoors via open doors, windows etc. It is a widely distributed species whose larvae infest stored grain.