

Lesson 10: Comparing Butterflies and Moths

Key Concepts:

- Butterflies and moths share some similarities that place them together in the insect order *Lepidoptera*.
- Butterflies and moths also share some differences.
- Butterflies and moths have evolved differently as they have adapted to different aspects of their environments over time.

Skills:

- Compare and contrast
- Read or listen for understanding

Materials:

- Images of butterflies and moths
- *Characteristics of Butterflies and Moths* sheet
- Venn diagram
- Glue
- Scissors
- Picture book on butterflies and moths, such as *Butterflies and Moths* (Kalman and Everts, 1994)

Objective

Students learn the similarities and differences, in general terms, between butterflies and moths.

Background

Moths and butterflies are in the same insect order, *Lepidoptera*. The name of this order describes a characteristic that all *Lepidoptera* share: scale wings. Scales cover their wings and their bodies. Additionally, all *Lepidoptera* have four wings (a pair of forewings and a pair of hindwings), antennae, and compound eyes. All undergo complete metamorphosis, with larvae that molt as they develop. There is no distinct line of features to divide moths and butterflies, but in general, the distinctions (and some exceptions) are these:

- Most moths build cocoons, using silk that they spin, or bury their pupae in the earth for protection. Butterflies usually form a “naked” pupa, called a chrysalis. However, some skippers and Parnassian butterflies build rudimentary cocoons.
- Moths are generally active at night, while butterflies are active during the day. However, there are some brightly colored moths that are active during the day.
- Moths generally have subdued, camouflaged colors, while butterflies are often more colorful.
- Moths generally have larger bodies, in proportion to their wings, with longer scales covering them.
- Moths generally have straight, feathery, or branched filaments, while butterflies often have clubbed antennae with small knobs on the end.
- When resting, butterflies often have their wings folded upright, like hands pressed together, while moths often rest with their wings open.

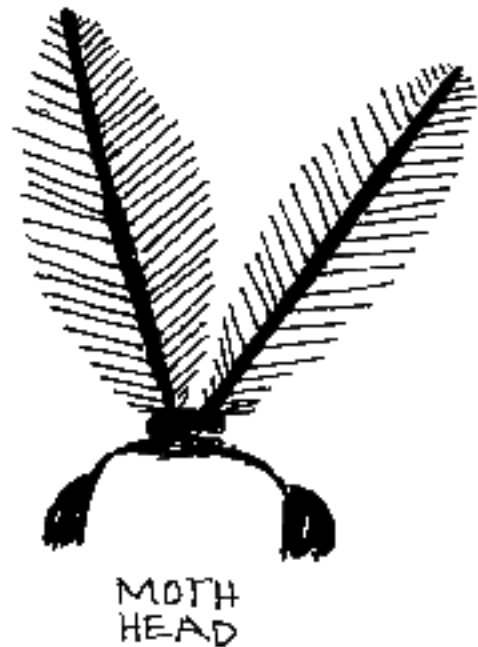
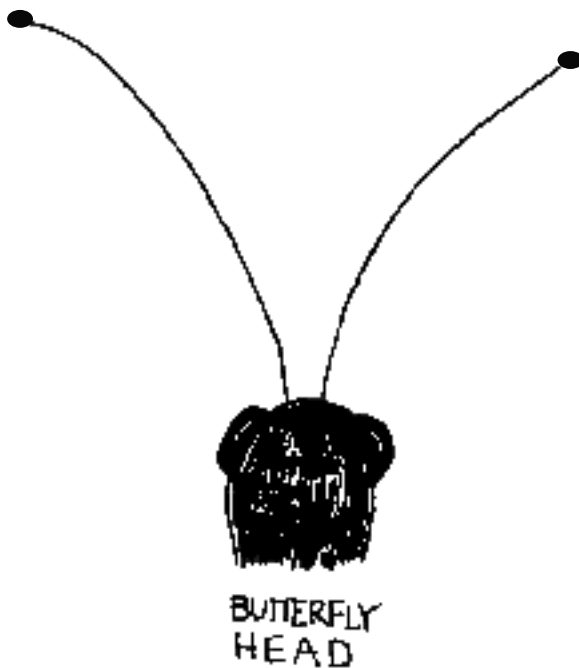
Procedure

1. In discussion or on paper, have students share everything they know about how moths and butterflies are alike and different. Use a variety of print materials to have students look at butterfly and moth species. Try to show some examples of them in their respective habitats.
2. Distribute the *Characteristics of Butterflies and Moths* sheet to each student. Instruct students to cut out the various characteristics. They should then draw a Venn diagram (two concentric circles) large enough to accommodate these slips of paper.
3. Students sort the characteristics according to whether they belong

exclusively to either moths or butterflies, or whether they are shared by both.

Students might work with a partner or check their work with a partner. Before gluing the characteristics into a Venn diagram, choose one or more of the following to give students information on similarities and differences:

- read a book to them, such as *Butterflies and Moths*
 - use on-line resources to read about moths and butterflies
 - explore books
4. Go over the actual comparison/contrasts, and then have students glue down their slips. Remind students that there are often exceptions to all generalizations, and that is true for moths and butterflies, as well. Example: The brightly colored tiger moth is active during the day.
 5. Lead a closing discussion on why organisms that are so similar end up with such distinct differences. Talk about how over time, animals evolve, with those that are best able to survive and reproduce in their environment passing their genes to future generations. Because there are many different species with different characteristics, multiple kinds of butterflies and moths (and other organisms) can live together in the same ecosystem.



Characteristics of Moths and Butterflies

Cut out the following characteristics and bring to sort them by “butterflies only”, “moths only” or “both”.

| | | |
|--|----------------------------------|----------------------------------|
| 6 legs (as adults) | compound eyes (as adults) | head, thorax, abdomen |
| 2 pairs of wings | hatches from an egg | makes a chrysalis |
| usually (but not always) has a proboscis | is an insect | often spins a cocoon |
| has a spinneret (spins silk) | thick, feathery antennae | wings upright when resting |
| wings usually open when resting | usually dull colored wings, body | often brightly colored wings |
| often active at night | active during the day | Many long scales on a thick body |
| fewer scales on body | complete metamorphosis | 2 antennae |