Insect Wings

Scientific Background

Generally speaking, *wings* are thin, flat, and membranous, supported by hardened veins. Wings are not totally stiff, but can bend and flex during flight to improve aerodynamics. In some cases, insect wings are covered with fine hairs or scales. Most species of winged insects have two pairs of wings. The number and type of wings an insect has is used in classifying insects.

The ability to fly is not determined by the number or the size of an insect's wings. Some insects with large wings, like antlions, are relatively poor fliers, while bees, with smaller wings, are good fliers.

Though insect wings are primarily used for flight, they may also serve a number of other purposes. The wings can:

- act as leathery armor to protect the insect.
- present bright colors to attract a mate or warn a predator.
- present muted colors to camouflage the insect and thereby hide it from its predators.
- present dark and light colors to reflect and absorb different wave lengths of light, thus allowing the insect to control its body temperature.
- function as adaptations to enable the insect to "sing" by scraping one wing against another.

In some insects, the wings may perform two or more of these functions simultaneously.

Vocabulary

- adaptation
- aerodynamic
- attract
- camouflage
- eye spot
- fore wings
- hind wings
- leathery
- membranous
- predator
- scales
- transparent
- veins
- warn

Vocabulary definitions can be found in the ***Backyard Bugs*** *Glossary.*

Thinking Question

How would you design a pair of wings for an insect? Relate the wings' features to their function. Have students sketch and describe their design ideas.

Exploratory and Extension Activities

Additional Exploratory and Extension activities are available in the *Backyard Bugs* Teacher's Guide.

Bug Symmetry

Use finger paints or watercolors to draw one half of a bug, such as a butterfly. Then fold the paper in half to create the other half of the bug.

Use the different bugs from ***Backyard Bugs*** to investigate bilateral symmetry, the concept that animals have a body plan that has the left half and right half of the body forming a mirror image when the animal is divided down the length of its body. Explore the patterns for each ***Backyard Bug*** and write descriptions of each bug's symmetry.

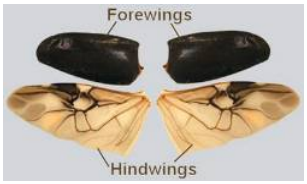
Dragonflies in Folklore

Visit http://people.colgate.edu/wda/folklore.htm as a starting point to investigate dragonflies in folklore and art.

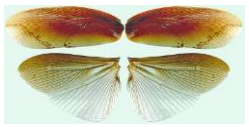
Name: _____

Insect Wings

Cut out the pictures of insect wings on the right.
Paste the wings with the name of the insect they belong to.

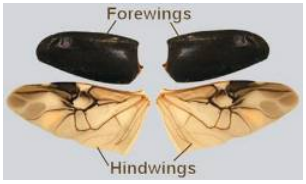
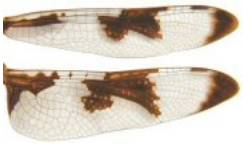
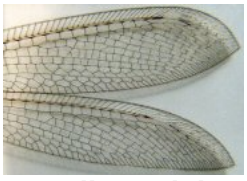
Paste the picture of the insect's wings.	Describe the wing.
 Whirligig Beetle	The whirligig beetle's fore wings are hard. The fore wings protect the membranous hind wings and the body.
Cockroach	
Dragonfly	
Monarch Butterfly	
Luna Moth	
Antlion Adult	

Cut out the insect wings.



Answer Key

Insect Wings

Cut out the pictures of insect wings on the right. Paste the wings with the name of the insect they belong to.	
Paste the picture of the insect's wings.	**Describe the wing.**
 **Whirligig Beetle**	**The whirligig beetle's fore wings are hard. The fore wings protect the membranous hind wings and the body.**
 **Cockroach**	*A cockroach has one pair of leathery, thickened fore wings that fold over the cockroach's body for protection. Another pair of membranous hind wings underneath the fore wings are used for flying.*
 **Dragonfly**	*Dragonfly wings are transparent with veins. The fore wings have a different shape from the hind wings.*
 **Monarch Butterfly**	*Monarch butterflies have wings that are orange with black stripes and white dots. These colors are a warning to predators that Monarch butterflies taste bad.*
 **Luna Moth**	*The Luna moth has long, curving tails on its hind wings. They have eyespots on each of their four wings. The Luna moth's wings are pale green.*
 **Antlion Adult**	*The antlion adult has transparent wings with a netlike pattern of veins.*