

# INSECTS and ARACHNIDS

**OBJECTIVE:** To learn the characteristics of an insect.  
 To distinguish between beneficial and harmful insects.  
 To know the characteristics of arachnids.

**MATERIALS:**

- \* Plastic insects in bags.  
 (Butterfly, House Fly, Grasshopper, Bee, Ant, Beetle, Dragonfly, Praying Mantis, Ladybug.  
 Also a spider—an arachnid, and a caterpillar—a larva)
- \* 4 large plastic insects
- \* Insect cards
- \* Exoskeleton in bag
- \* Oak gall
- \* Tarantula Hawk in container
- \* Stag Beetle in jar
- \* Black Widow in jar
- \* 2 Beetles in containers
- \* 2 Butterflies in containers
- \* Insect and Butterfly mini-posters
- \* Poster - "What's an Insect?"

**ACTIVITY:**

- 1) Sort packet of bugs into those that are beneficial and those that are harmful or considered pests. (See page 2)
- 2) Sort bugs into herbivores and carnivores. (See page 2)

## INSECT CHARACTERISTICS:

- \* 3 Body Parts - head, thorax, abdomen
- \* 6 Legs - legs are jointed
- \* 2 Antennae
- \* 2 Compound Eyes
- \* 1 or 2 pairs of wings
- \* Exoskeleton (no interior skeleton like we have)
- \* Invertebrate

**3 Body Parts - Head:**

- \*special mouthparts for chewing or sucking,
- \*compound eyes,
- \*antennae used for feeling, smelling and sometimes for taste and hearing.

**Thorax:**

- \*3 pairs of jointed legs
- 1 or 2 pairs of wings  
 (Beetles have 1 pair of hard wings which protect the underlying "flying wings")

**Abdomen:** \*Most abdomens are segmented.

# INSECTS and ARACHNIDS

- \*The abdomen contains the heart and digestive organs.
- \*Insects breathe through tiny holes, spiracles, which are connected to breathing tubes. The spiracles are aligned along each side of the abdomen.

Most insects lay eggs and mature through a process called METAMORPHOSIS.

*Complete Metamorphosis:* egg to larva (grub/worm) to pupa to adult.

*Incomplete Metamorphosis:* egg to nymph to adult. (Nymph is like a miniature adult and will go through several stages before becoming a true adult.)

Insects are either plant eaters (herbivores) or meat eaters (carnivores).

*Herbivores* - Grasshopper, Butterfly, Bee, Caterpillar

*Carnivores* - Dragonfly, Ladybug, Praying Mantis, Spider

*Scavenger* - House Fly

(*Omnivores* - Some species of crickets and some species of earwigs.)

NOTE - Ants & Beetles - Are either omnivores or herbivores  
(Some species are herbivores and some species are carnivores.)

## BENEFICIAL INSECTS (helpful bugs)

Butterfly - pollinator  
Bee - pollinator  
Dragonfly - eats bugs  
Ladybug - eats aphids  
(Spider - eats bugs)

## HARMFUL INSECTS

Grasshopper - eats plants  
House Fly - carries diseases  
Caterpillar - eats plants  
Mosquito - carries diseases

Social insects like ants, bees and wasps live in groups and share the work required to survive.

# INSECTS and ARACHNIDS

## ARACHNIDS:

Spiders, Ticks, Mites and Scorpions

## ARACHNID CHARACTERISTICS:

- \*2 body parts
- \*4 pairs of jointed legs
- \*Several pairs of simple eyes
- \*Mandibles for biting
- \*Mouth is designed for sucking; (like a straw)
- \*Exoskeleton
- (\*Arachnids do not have antennae or wings)

## 2 Body Parts:

Cephalothorax - The head and thorax are fused together.

It contains the simple eyes, the mouth parts, and 8 jointed legs.

Abdomen: This contains the heart, intestine, breathing system.  
In spiders the abdomen also contains the silk gland and the spinneret (at the lower rear of the abdomen).

## FUN FACTS:

Honeybees have hair on their eyes.

Most house flies live less than 4 weeks.

Praying Mantis is the only insect that can turn its head.

A mosquito flaps its wings 500 times per second.

Dragonflies can fly up to 50 miles per hour.

A butterfly can taste with its feet

When a spider walks, it always has 4 feet on the ground and 4 feet off the ground.

# INSECTS and ARACHNIDS

Insects have 3 body parts - HEAD, THORAX and ABDOMEN.

Insects have an EXOSKELETON. (They have no interior skeleton like we do.)

HEAD - Compound eyes,  
Special mouthparts for chewing or sucking.  
Antennae (Feelers) which are jointed for touch or smell.

THORAX - 6 legs; legs are jointed  
2 pairs of wings (beetles have 1 hard pair of wings which protect the underlying 'flying wings'.)

ABDOMEN - Most abdomens are segmented.  
The abdomen contains the heart and digestive organs.  
Insects breathe through tiny holes, spiracles, which are connected to breathing tubes. The spiracles are aligned on each side of the abdomen.

Insects have an EXOSKELETON. They have no interior skeleton like we do.

Most insect lays eggs and mature through a process called METAMORPHOSIS.  
METAMORPHOSIS - Egg to Larva (grub/worm) to Pupa (cocoon) to Adult.

HERBIVORES - Grasshopper, Butterfly, Bee, Ant, Beetle, Caterpillar

CARNIVORES - Dragonfly, Ladybug, Praying Mantis, Ant, Beetle, Spider

SCAVENGER - House Fly.

(OMNIVORES - Some species of crickets and some species of earwigs.)

NOTE - ANTS: Some species are herbivores and some are carnivores.

BEEETLES: Some species are herbivores and some are carnivores.

# INSECTS and ARACHNIDS

## BENEFICIAL INSECTS (Helpful bugs)

BUTTERFLY - pollinator  
BEE - pollinator  
DRAGONFLY - eats bugs  
LADYBUG - eats aphids  
SPIDER - eats bugs

## HARMFUL INSECTS

GRASSHOPPER - eats plants  
HOUSE FLY - carries diseases  
CATERPILLAR - eats plants

Social insects like ants, bees and wasps live in groups and share the work required to survive.

As insects grow, they shed their outer covering and grow a new one. They molt!

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SPIDERS - have 2 body parts

CEPHALOTHORAX - 8 jointed legs attached

2 simple eyes (no antennae or wings)

Mouth looks like a straw, designed for sucking.  
(Spiders can't chew but can eat their own silk.)

ABDOMEN - Heart

Intestine

Spinneret (lower rear of abdomen)

Silk Gland

Breathing system

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## FUN FACTS

Honeybees have hair on their eyes.

Most houseflies live less than 1 month

Praying mantis is only insect that can turn its head.

A mosquito flaps its wings 500 times a second.

Dragonflies can fly up to 50 miles per hour.

A butterfly can taste with its feet.

A slug has 4 noses.

When a spider walks it always has 4 feet on the ground and 4 feet off the ground!