










Insects Order Identification

A Visual Guide



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Diptera

- ✚ Diptera (Meaning: "Two wings") includes insects like houseflies, mosquitoes, and hoverflies.
- ✚ They are characterised by having only one pair of wings and specialised balancing organs called halteres.
- ✚ They have a mobile head, with a pair of large compound eyes
- ✚ Mouthparts designed for piercing and sucking (mosquitoes, black flies and robber flies), or for lapping and sucking in the other groups.



Image: Wikipedia

Family names inside brackets

- Housefly (*Muscidae*) (top left)
- *Haematopota pluvialis* (*Tabanidae*) (top right)
- *Ctenophora pectinicornis* (*Tipulidae*) (mid left)
- *Aedes notoscriptus* (*Culicidae*) (mid right)
- *Milesia crabroniformis* (*Syrphidae*) (bottom left)
- *Holcocephala fusca* (*Asilidae*) (bottom right)

Hymenoptera (Bees, Wasps, Ants)

- ✚ Hymenoptera (Meaning: "**Membrane wings**") encompasses bees, wasps, ants, and sawflies.
- ✚ These insects typically have two pairs of membranous wings
- ✚ Known for their roles in pollination and complex social structures.



Image: Wikipedia

Family names inside brackets

Clockwise from top left:

- Red imported fire ant (**Formicidae**)
- *Vespula vulgaris* (**Vespidae**)
- *Tenthredopsis sordida* (**Tenthredinidae**)
- Western honey bee (**Apidae**)

Hemiptera (True Bugs)

- ✚ Hemiptera (Meaning: "Half wings") comprises aphids, cicadas, planthoppers, leafhoppers, assassin bugs and shield bugs.
- ✚ Commonly called True Bugs
- ✚ They possess piercing-sucking mouthparts and often have forewings that are partly hardened and partly membranous.



Image: Wikipedia

Species from each of the four suborders of Hemiptera

Clockwise from top left:

- *Acanthosoma labiduroides* (Heteroptera)
- *Xenophyes forsteri* (Coleorrhyncha)
- *Magicicada septendecim* (Auchenorrhyncha)
- Aphids (Sternorrhyncha)

Coleoptera

- ✚ Coleoptera (Meaning: "Sheath wings"), is the largest insect order that includes beetles like ladybirds and weevils.
- ✚ They are distinguished by their hardened forewings (elytra) that cover and protect the hind wings and abdomen.



Image: Wikipedia

Clockwise from top left:

- Female golden stag beetle (*Lamprima aurata*)
- Rhinoceros beetle (*Megasoma* sp.)
- Long nose weevil (*Rhinotia hemistictus*)
- Cowboy beetle (*Chondropyga dorsalis*)
- A species of *Amblytelus*

Lepidoptera (Butterflies and Moths)

- ✚ Meaning: "**lepid**" (scale) and "**ptera**" (wings), because their wings are covered with tiny scales that give them their colours and patterns.
- ✚ **Body structure:** Lepidopterans have a **head, thorax, and abdomen**, with **two pairs of wings** and **six legs**. Their wings are usually large and often brightly colored (especially in butterflies).
- ✚ **Mouthparts:** Most adult Lepidoptera have a special mouthpart called a **proboscis** — a long, coiled tube they use like a straw to sip nectar.
- ✚ **Difference between butterflies and moths:** Generally, butterflies are active during the day (diurnal) and have slender antennae with little clubs at the ends, while moths are often nocturnal and have feathery or straight antennae.
- ✚ **This is the second largest order of insect** (next to Coleoptera (Beetles))



Image: Wikipedia

Peacock butterfly (*Aglais io*)



Image: Wikipedia

Elephant hawk moth (*Deilephila elpenor*)

- ✚ A **caterpillar** is the **larval stage** of insects in the order **Lepidoptera** — which includes **butterflies** and **moths**. ❗
- ✚ Here's a simple explanation:
- ✚ **Life stage:** The caterpillar is the **second stage** in the complete metamorphosis cycle:
- ✚ Egg → 2. **Caterpillar (larva)** → 3. Pupa (chrysalis or cocoon) → 4. Adult (butterfly or moth)
- ✚ **Body structure:**
- ✚ Long, soft body, often segmented.
- ✚ **Three pairs** of true legs near the head (which later become adult legs).
- ✚ **Additional fleshy "prolegs"** (false legs) on the abdomen to help them grip and move.
- ✚ **Mouthparts:** They have strong **chewing mouthparts** for eating.
- ✚ **Diet:** Most caterpillars are **herbivores**, mainly feeding on **leaves**, but some eat flowers, fruits, or even other insects.
- ✚ **Growth:** Caterpillars grow rapidly. They molt (shed their skin) several times as they get bigger.
- ✚ **Defence:** Some caterpillars have **camouflage**, **spines**, **toxic chemicals**, or **bright warning colours** to protect themselves from predators.

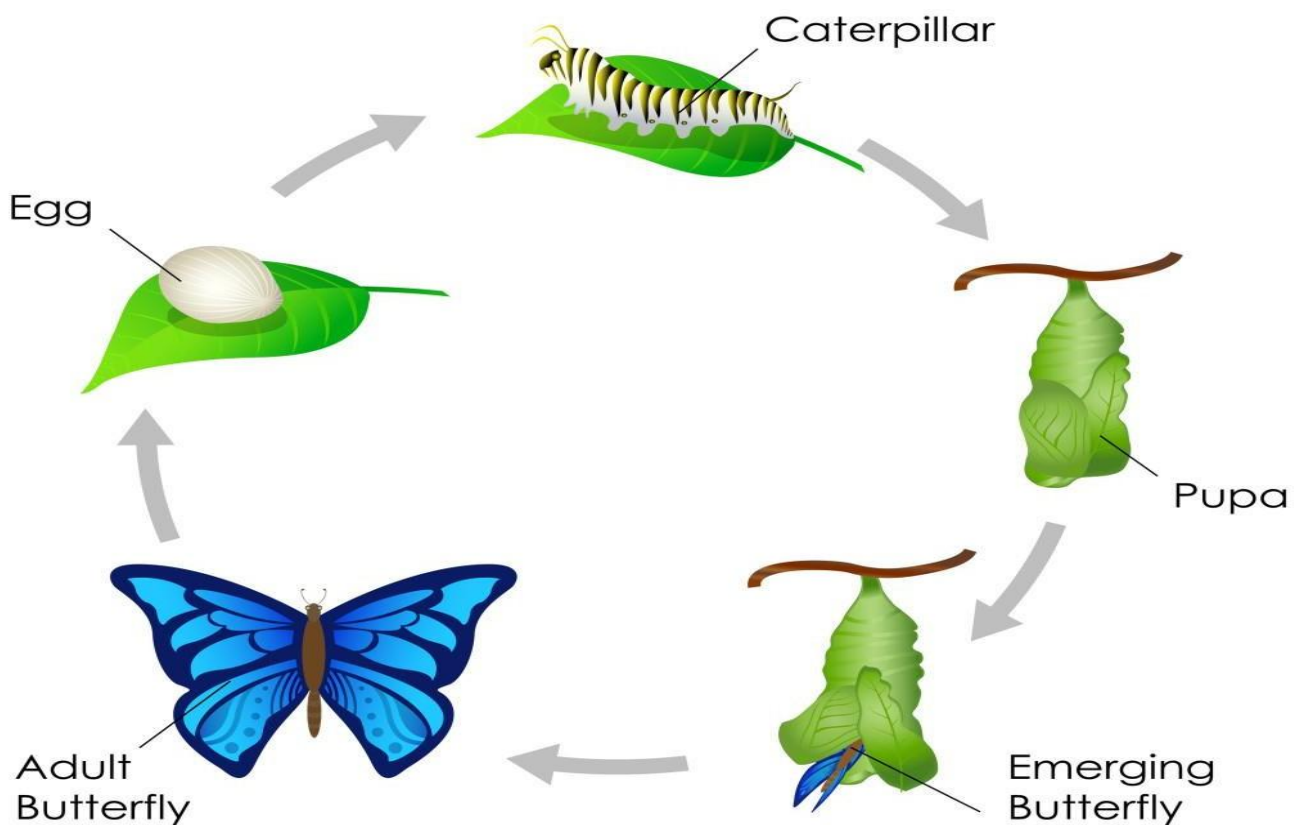




Image: Kids Press Magazine

Butterfly Lifecycle

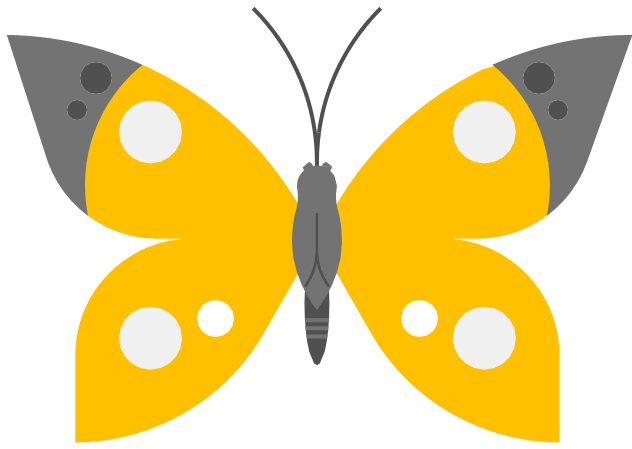
🕷️ Arachnida (spiders, scorpions, ticks, mites)

- ✚ They are **NOT** classified as insects, as insects come under the class Insecta.
- ✚ **Arachnida** is a class of animals within the phylum **Arthropoda**. Members of this group are called **arachnids**, including creatures like **spiders, scorpions, ticks, and mites**.
- ✚ Here's a simple breakdown:
- ✚ **Body structure:** Arachnids typically have **two main body parts**:
 - **Cephalothorax** (head and thorax fused together)
 - **Abdomen**
- ✚ **Legs:** They have **eight legs** (unlike insects, which have six).
- ✚ **No antennae or wings:** Unlike insects, arachnids don't have antennae or wings.
- ✚ **Mouthparts:** They often have special mouthparts called **chelicerae** (sometimes shaped like pincers or fangs) used for grasping or biting prey. Some also have **pedipalps**, which help in sensing or capturing prey.
- ✚ **Respiration:** They breathe through **book lungs** or **tracheae**.



Feature	Arachnida 	Insecta 
Body Segments	2 (Cephalothorax + Abdomen)	3 (Head + Thorax + Abdomen)
Number of Legs	8	6
Antennae	None	1 pair
Wings	None	Usually 1 or 2 pairs (or none)
Examples	Spiders, Scorpions, Ticks, Mites	Butterflies, Beetles, Ants, Bees
Mouthparts	Chelicerae (fangs/pincers)	Mandibles (jaws)
Respiratory Organs	Book lungs or tracheae	Tracheae
Life Cycle	No standard complete metamorphosis	Many have complete metamorphosis
Habitat	Mostly land	Land, water, and air





Insects Order Visual Guide

