

First stage/ environmental science Dep.
BIOLOGY LAB.

Arthropods

75% of all animals are arthropods

Characteristics of arthropods

1. Jointed limbs
2. Segmented body with specialized parts
3. Well-developed nervous system

Jointed Limbs

1. Jointed limbs gives arthropods their names
2. "Arthro" means joint
3. "Pod" means foot
4. Jointed limbs are arms, legs, or other similar body parts
5. Jointed limbs let arthropods to move easily



Segmented and Specialized

1. Most segments in arthropods are identical
2. Some segments include specialized parts such as

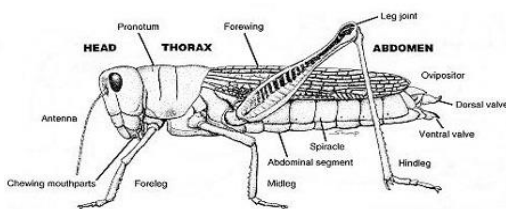
- A. wings
- B. antenna
- C. gills
- D. pincers
- E. claws



Segmented and Specialized

3. These specialized parts form during the animal's development

- A. head
- B. thorax
- C. abdomen



Segmented and Specialized

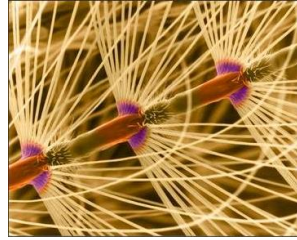
4. Exoskeleton- external (outside) skeleton on arthropods made of protein and *chitin*
- A. does the same thing as an internal skeleton
 - B. allows the animal to move
 - C. all muscles attach to the exoskeleton and move that part of the animal when the muscles contract
 - D. acts like a suit of armor to protect internal organs and muscles

Segmented and Specialized

5. All arthropods have a head and a well developed brain
6. Some arthropods can detect light but can not form an image
7. Some arthropods can see images because they have compound eyes
- Compound eyes- are made of identical light-sensitive cells

Kinds of Arthropods

1. Arthropods are classified according to the kinds of body parts they have



2. They are classified by their number of legs, and the antennae they have

3. Antennae- are the feelers that arthropods use for touch, taste, and smell



Phylum Arthropoda is classified into four subphyla

- 1- Trilobita Extinct (Fossilised)
- 2- Crustacia (All aquatic forms)
- 3- Chelicerata
 - Class Arachnida
 - (includes three important orders)
 - (A) Acarina (Ticks and mites)
 - (B) Scorpionida (All forms of scorpions)
 - (C) Areinida (all spiders)
- 4- Uniramia – Three classes-Hexapoda; Chilopoda; and Diplopoda

Class Arachnida

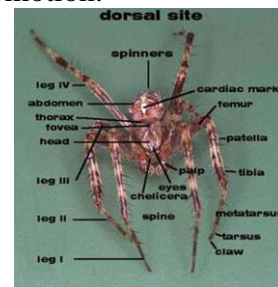
Spiders, scorpions and mites belong to this class.

Spiders are the largest group of arachnids.

Most arachnids have only 2 body regions- a cephalothorax and the abdomen.

Arachnids have 2 chelicerae for poisoning prey and 2 pedipalps for sensing and handling food.

4 remaining appendages aid in locomotion.



Class Chilopoda and Diplopoda

Centipedes belong to class Chilopoda and millipedes belong to class Diplopoda.

Centipedes are carnivorous and eat soil arthropods, snails, slugs, and worms.

Centipede bites are painful to humans.

Both have Malpighian tubes for waste excretion.

Both have tracheal tubes for gas exchange.

Millipedes eat mostly plants and dead material.

Millipedes also have stink glands for scaring predators.



Class Insecta

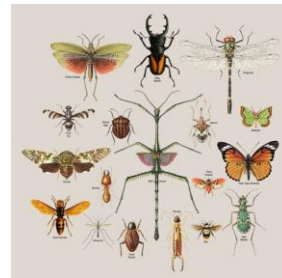
Insects are the largest group and most successful arthropods.

Internal fertilization

Large number of eggs are produced to ensure a large number of offspring.

Females lay eggs in wood or the ground.

May go through complete or incomplete metamorphosis depending on species.



Insects

1. Largest group of arthropod
2. Insects live everywhere EXCEPT the ocean
3. Insects are beneficial when they
 - A. pollinate
4. Insects are harmful when they
 - A. eat crops
 - B. carry diseases

Insect Development

- Metamorphosis- the development of an insect from an egg to an adult



Insects Cont'd

Complete metamorphosis: egg, larva, pupa, and adult.

Incomplete metamorphosis: egg, nymph, and adult.

Nymphs compete with adults for same resources and are not sexually mature.

