

CLASSIFICATION OF PHYLUM ARTHROPODA UPTO CLASSES & POSITION OF INSECTS IN ANIMAL KINGDOM AND ITS RELATIONSHIP WITH OTHER ARTHROPODA

Insects are invertebrates grouped in the phylum Arthropoda (Subphylum : Uniramia)

Characters of the Phylum Arthropoda: (Arthro-joint, poda-foot)

- i. Segmented body
- ii. Segments grouped into 2 or 3 regions known as Tagmosis
- iii. Renewable chitinous exoskeleton
- iv. Grow by moulting
- v. Bilateral symmetry
- vi. Body cavity filled with blood-Haemocoel
- vii. Tubular alimentary canal with mouth and anus
- viii. Dorsal heart with ostia
- ix. Dorsal brain with ventral nerve cord
- x. Striated muscles
- xi. No cilia
- xii. Paired segmented appendages

Classification: 7 classes.

Phylum : Arthropoda

Classes :

1. Onychophora (claw bearing)e.g. Peripatus
2. Crustacea (Crusta - shell)e.g. Prawn, crab, wood louse
3. Arachnida (Arachne - spider)e.g. Scorpion, spider, tick, mite
4. Chilopoda (Chilo - lip; poda - appendage)e.g. Centipedes
5. Diplopoda (Diplo - two; poda- - appendage)e.g. Millipede
6. Trilobita (an extinct group)

7. Hexapoda or Insectae.g. Insects.

POSITION OF INSECTS IN ANIMAL KINGDOM

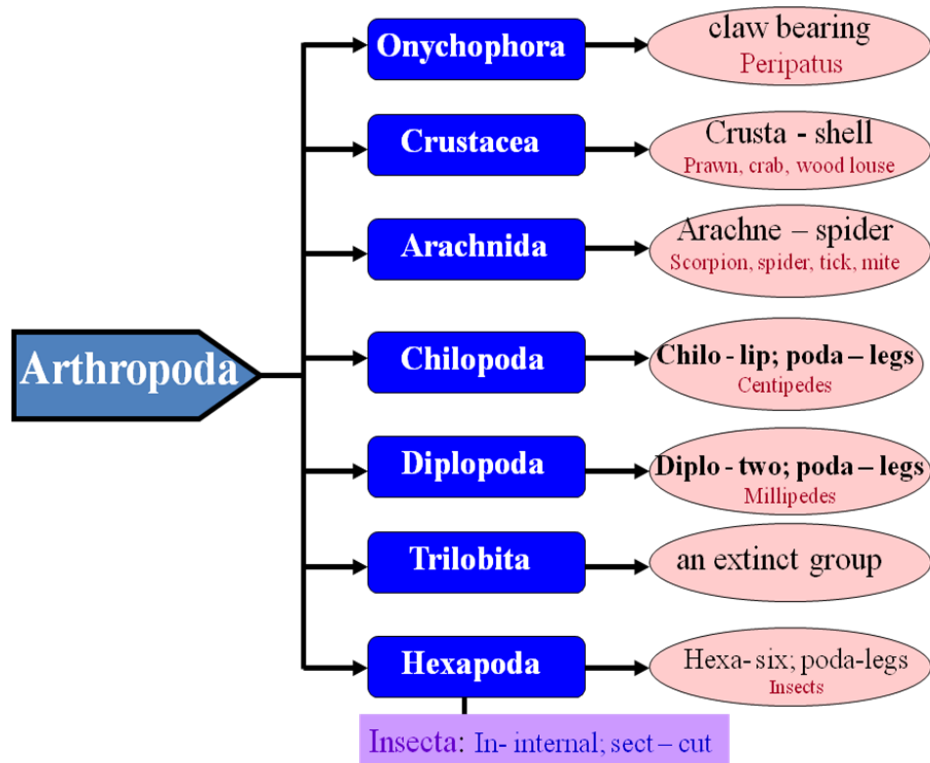
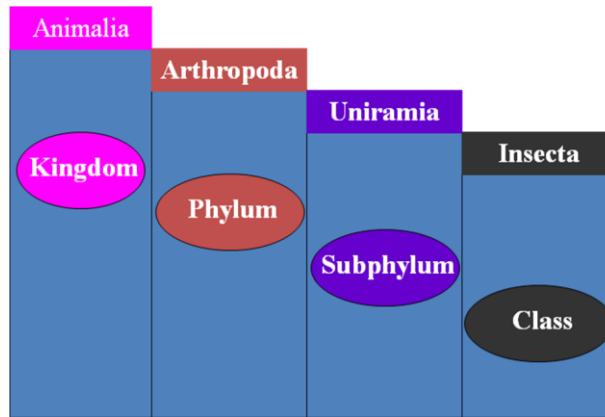


Table 1. Relationship of Insects with other Arthropods

Characters		Onychophora	Crustacea	Arachnida	Chilopoda	Diplopoda	Insects (Hexapoda)
1.	Habit	Terrestrial	Aquatic and few terrestrial	Terrestrial	Terrestrial	Terrestrial	Many terrestrial and very few aquatic
2.	Body regions	Not distinct	Two-Cephalothorax and abdomen	Three-Pro, meso and Metasoma eg. Scorpion Two-Pro and Opisthosoma eg. Spider	Two-Head and multisegmented trunk	Two-Head and multisegmented trunk	Three-Head, thorax and abdomen
3.	Antenna	1 pair	2 pair - Antennule and Antenna	No antenna	One pair	One pair	One pair
4.	Visual organs	Not distinct	One pair- Stalked compound eyes	One pair-simple eyes	One pair-simple eyes	One pair-simple eyes	Both simple eyes and compound eyes (one pair)
5.	Locomotor organs	Many pairs of unjointed legs	Minimum five pairs of biramous legs	Four pairs	One pair per segment (First pair of legs modified as poison claws)	Two pair per segment (No poison claws)	Three pairs of legs on three thoracic segments and two pairs of wings on meso and metathorax

6.	Mouth parts	Non mandibulate	Mandibulate (1 pair)	Non mandibulate, but possess chelicerae	Mandibulate - 1 pair	Mandibulate - 1 pair	Mandibulate - 1 pair
7.	Respiration	Cutaneous	Gill breathing	Book lungs (Scorpion) and tracheal (spiders)	Tracheal	Tracheal	Tracheal
8.	Body fluid	Haemolymph	Haemolymph	Haemolymph	Haemolymph	Haemolymph	Haemolymph
9.	Circulatory system	Heart with ostia	Heart with ostia	Heart with ostia	Heart with ostia	Heart with ostia	Heart with ostia
10.	Development	Anamorphosis	Anamorphosis	Metamorphosis absent- Scorpion; Metamorphosis present-mites	Metamorphosis	Metamorphosis	Metamorphosis
11.	Habit	Feed on organic matter	Herbivorous and Carnivorous	Phytophagous and predators	Carnivorous	Herbivorous	Phytophagous, predators and parasitoides
12.	Special features	Link between Annelida and Arthropoda	Calcification strengthens exoskeleton	Life cycle; Egg-larva-numph-adult larva with 3 pairs of legs	Opisthogenital-gonopore present in the terminal	Progogenital-gonopore in 3rd segment	Genital structures on 8th and 9th abdominal segments. Brain with proto ,

				and Nymph with 4 pairs of legs	segment		deuto and tritocerebrum
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