

# Arthropoda (Characters, Classification and Types)

The phylum **Arthropoda** (Gr., *arthros* = joint, *podos* = foot) includes nearly a million species. No other phylum of animals rival the arthropods in success: the arthropods contain the most showy group, the insects and the most variable, the crustaceans, of any other animal phyla. Much of their success can be traced to a remarkable flexibility of body plan.

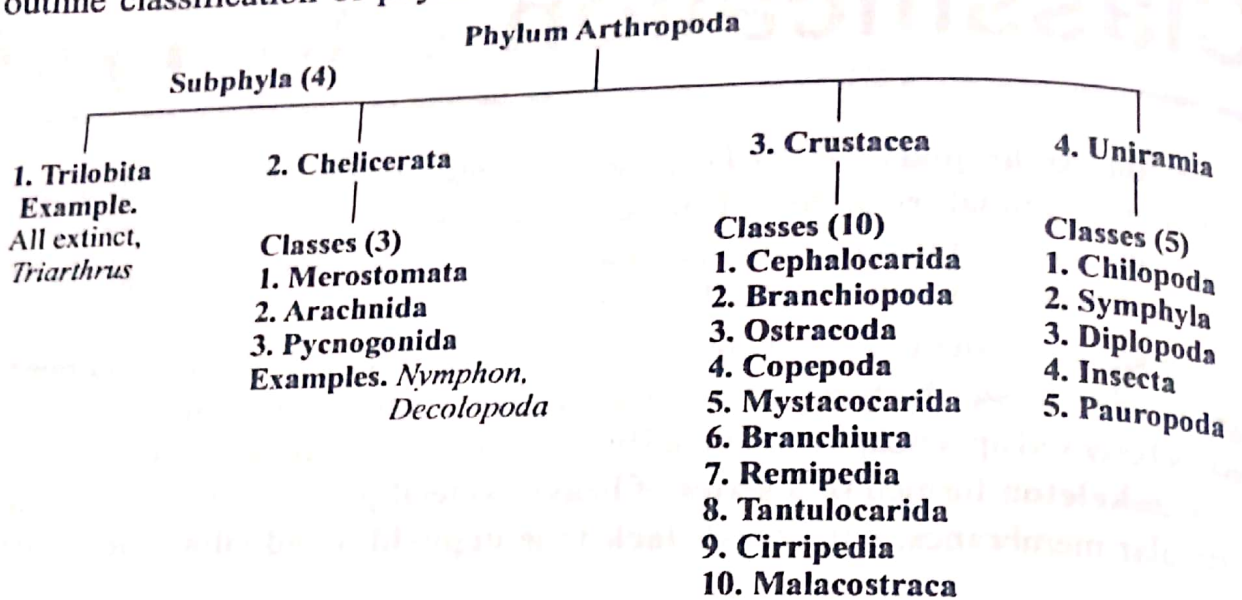
Arthropods are bilaterally symmetrical and segmented animals that are equipped with jointed appendages attached to each body segment. Appendages are typically specialized for specific functions. The surface of body and appendages is covered by a continuous cuticle of complex structure, *i.e.*, **chitin** containing **exoskeleton** formed of a series of heavy skeletal plates or rings, connected by thinner, flexible articular membranes. Arthropods **lack true nephridia and cilia**. They undergo moulting periodically.

## 38.1 CHARACTERS

1. Body is **bilaterally symmetrical, triploblastic, metamerically segmented**. Few anterior segments (usually 5) have fused to form a distinct head.
2. They have a fixed number of segments.
3. Body is covered and protected with a thick chitinous **cuticle** forming an **exoskeleton**.
4. The exoskeleton is dead and cannot grow. Therefore, the old exoskeleton is thrown off periodically and new one is developed to take its place and to compensate the increase in size. The phenomenon is called **moulting** or **ecdysis**.
5. Body segments usually bear **paired lateral and jointed appendages**. Appendages are variously modified to act as organs of stimulus detection, food getting, mastication, defence, locomotion, egg carrying and copulation.
6. **Musculature** is not continuous but comprises of separate striped muscles.
7. Body cavity is a **haemocoel**. True coelom is represented by spaces within the gonads and excretory organs.
8. Digestive system is complete; **mouth** and **anus** lie at opposite ends of the body.
9. Respiration occurs through **general body surface, gills** (in aquatic forms), **trachea** or **book lungs** (in terrestrial forms).
10. Blood vascular system (or circulatory system) is of **open type**. It includes an ostia-containing **heart, arteries** but lacks capillaries. The arteries open into haemocoel.
11. True nephridia are absent. Excretion occurs through coelomoducts (*e.g.*, green glands, coxal glands) and **Malpighian tubules**.

## 38.2 OUTLINE CLASSIFICATION

An outline classification of phylum Arthropoda is as under.



**Subphylum 2. Chelicerata**  
**Class 1. Merostomata**

**Subclasses (2)**

- 1. **Xiphosura**  
Order **Limulida**  
Example. *Limulus*
- 2. **Eurypterida**  
Example. *Eurypterus*

**Class 2. Arachnida**

**Orders (11)**

- 1. **Scorpiones**  
Examples.  
*Palamnaeus*, *Buthus*
- 2. **Palpigradi**  
Example.  
*Koenenia*
- 3. **Schizomida**  
Example.  
*Schizomus*
- 4. **Uropygi**  
Example.  
*Mastigoproctus*

**Orders (contd.)**

- 5. **Araneae**  
Example. *Lactrodectus*  
and other spiders
- 6. **Amblypygi**  
Example.  
*Charinus*
- 7. **Ricinulei**  
Example. *Ricinoides*
- 8. **Pseudoscorpiones**  
Example. *Chelifer*

**Orders (contd.)**

- 9. **Solifugae**  
Example.  
*Galeodes*
- 10. **Opiliones**  
Examples.  
*Leiobunum*, *Caddo*
- 11. **Acari**  
Examples. Mites (*Ixodes*),  
ticks (*Dermacentor*)



Subphylum 3. Crustacea  
Class 1. Cephalocarida  
Example. *Hutchinsoniella*  
Class 2. Branchiopoda

Subclasses (3)

1. Calmanostraca  
Order. Notostraca  
Example. *Triops*

2. Diplostraca  
Order (2)  
1. Conchostraca  
Example. *Cyzicus*  
2. Cladocera  
Example. *Daphnia*

3. Sarcostraca  
Order. Anostraca  
Example. *Artemia*

Class 3. Ostracoda

Subclasses (2)

1. Myodocopa  
Orders (2)  
1. Myodocopida  
Example. *Cypridina*  
2. Halocyprida  
Example. Planktonic species

2. Podocopa  
Orders (2)  
1. Podocopida  
Example. *Cypris*  
2. Platycopida  
Example. Marine benthic animals

Class 4. Copepoda

Orders (7)

1. Calanoida  
Example. *Calanus*

2. Misophrioida  
Example. *Misophria*

3. Harpacticoida  
Example. *Harpacticus*

4. Monstrilloida  
Example. *Monstrilla*

Orders (cont.)

5. Siphonostomatoida  
Examples. *Nemesis*,  
*Caligus*

6. Cyclopoida  
Example. *Cyclops*

7. Poecilostomatoida  
Example. *Ergasilus*

Class 5. Mystacocarida  
Order. Mystacocaridida  
Example. *Derocheliocaris*

Class 6. Branchiura  
Examples. *Argulus*, *Dolops*

Class 7. Remipedia  
Example. *Lasionectes*

Class 8. Tantulocarida  
Example. Copepode-like, tiny, parasitic on crustaceans

Class 9. Cirripedia

Order (4)

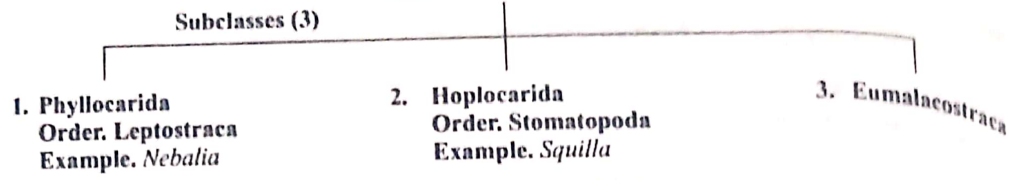
1. Ascothoracica  
Examples.  
*Dendrogaster*,  
*Ascothorax*

2. Acrothoracica  
Example.  
*Trypetesta*

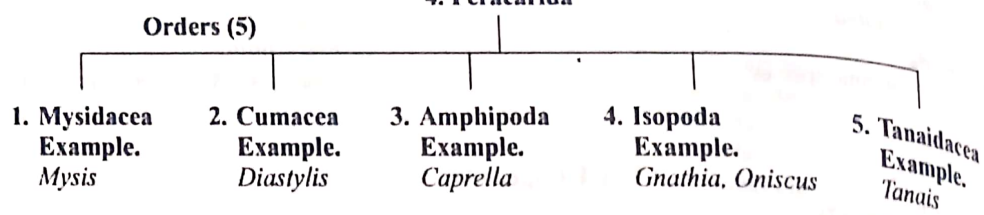
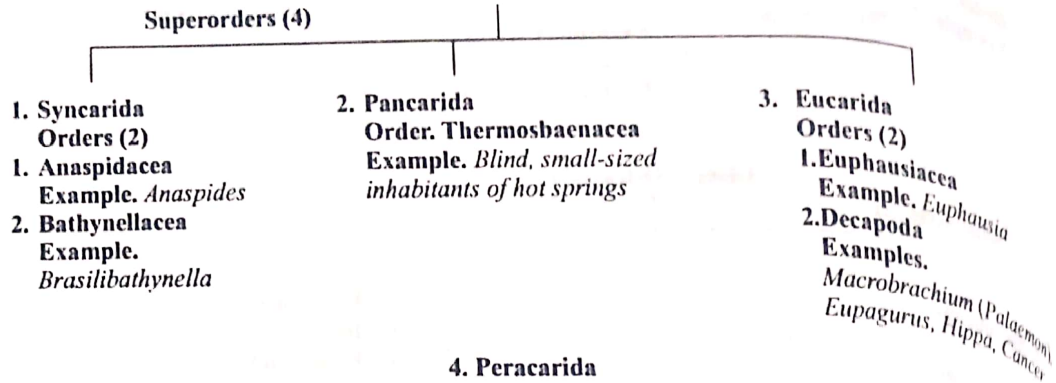
3. Thoracica  
Examples.  
*Lepas*, *Balanus*

4. Rhizocephala  
Example.  
*Sacculina*

Class 10. Malacostraca



Subclass 3. Eumalacostraca



Subphylum 4. Uniramia

