

MUSEUM COLLECTION

ARTHROPODA

Specimens & Permanent slides

Compiled By: Dr. Vagisha Rawal

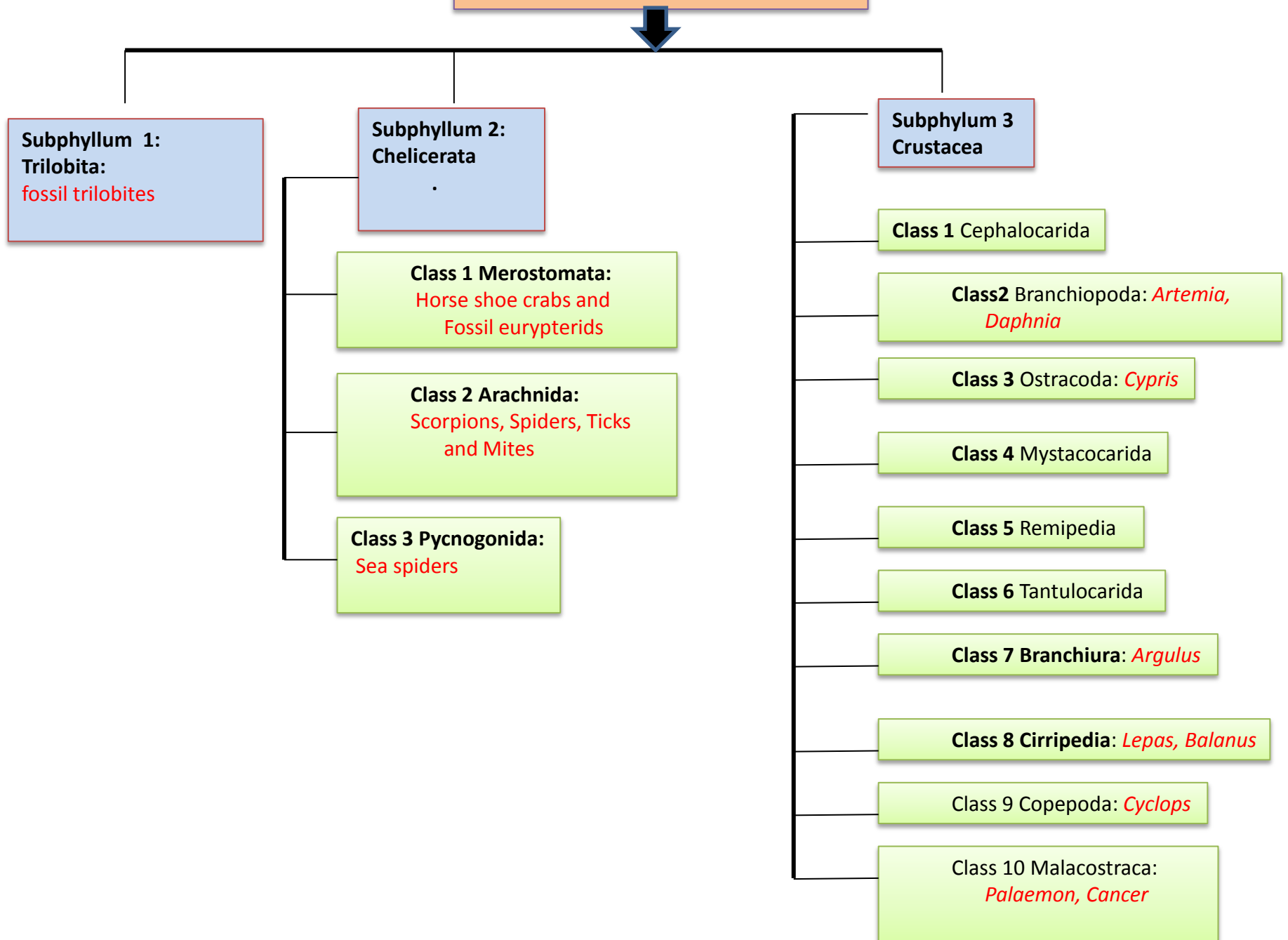
Picture credit.- Shalini Panwar

B.Sc. (Hons.) Zoology (Batch 2018-2022)

Palak Chugh

B.Sc. (Hons.) Zoology (Batch 2019-2022)

Phylum : Arthropoda



Phylum : Arthropoda

Subphyllum 4 Uniramia

Class 1 Insecta

*e.g. Periplaneta, Apis,
Termite*

Class 2 Chilopoda

e.g. Scolopendra

Class 3

Diplopoda: e.g.
Julus

Class 4 Symphyla:
symphylans

Class 5 Pauropoda:
Pauropodans

Classification followed: Invertebrate Zoology by Robert D. Barnes VII Edition

Limulus

Common name: Horse shoe Crab

Geographical distribution: Limulus is restricted to the North-Western Atlantic coast of North America, while the other genera are found along the coast of Asia (Japan, India, Korea and East Indies).

Scientific Classification:

Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum: Arthropoda (presence of jointed appendages)

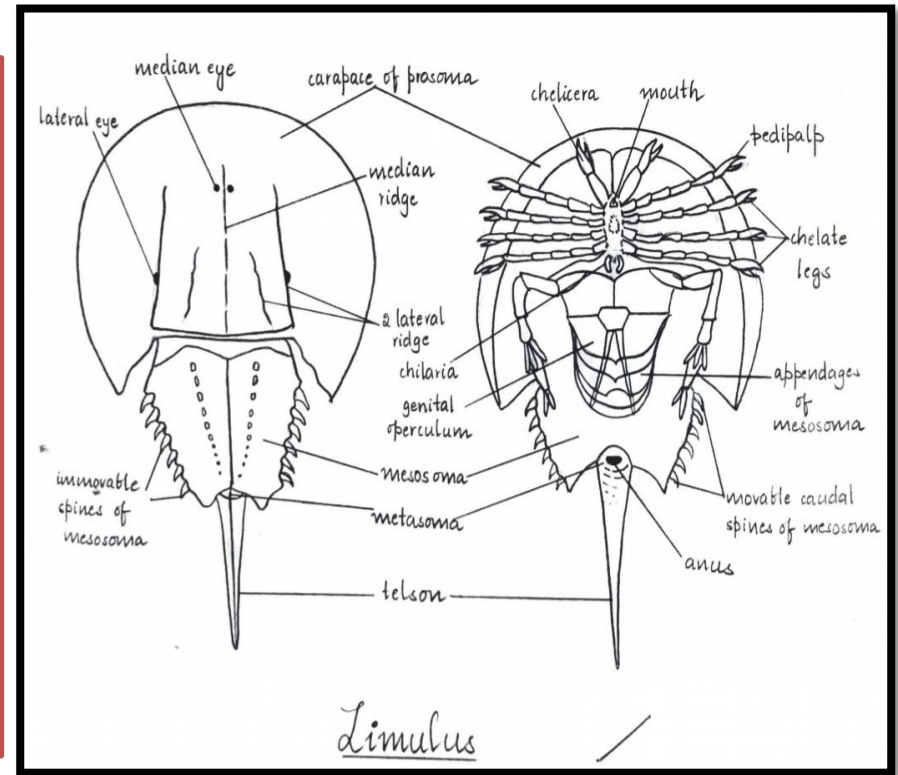
Class: Merostomata (a large shield that covers the cephalothorax, modified appendages, reduced eyes, telson)

Genus: Limulus



General Features:

1. Commonly called as King crab.
2. Body: Anterior cephalothorax (prosoma) and posterior abdomen(ophisthosoma)
3. Prosoma is covered by a large semicircular carapace and joined to
4. ophisthosoma by broad hinge Opisthosoma comprises of 6 segments , the mesosoma, a vestigial metasoma and a long telson
5. Marine, simple median and
6. compound lateral eyes,
7. Book gills are present
8. Coxal glands, no malpighian tubules.
9. Chelicerae are 3 jointed and chelate
10. Young are planktonic larvae.



Limulus

Palamnaeus

Common name: Scorpion

Geographical distribution: Scorpions are found on all continents except Antarctica. It lives in sand, crevices, under stones and in bark of dead trees

Scientific Classification

Kingdom: Animalia((Multicellular, eukaryotic, heterotrophic))

Phylum: Arthropoda (presence of jointed appendages)

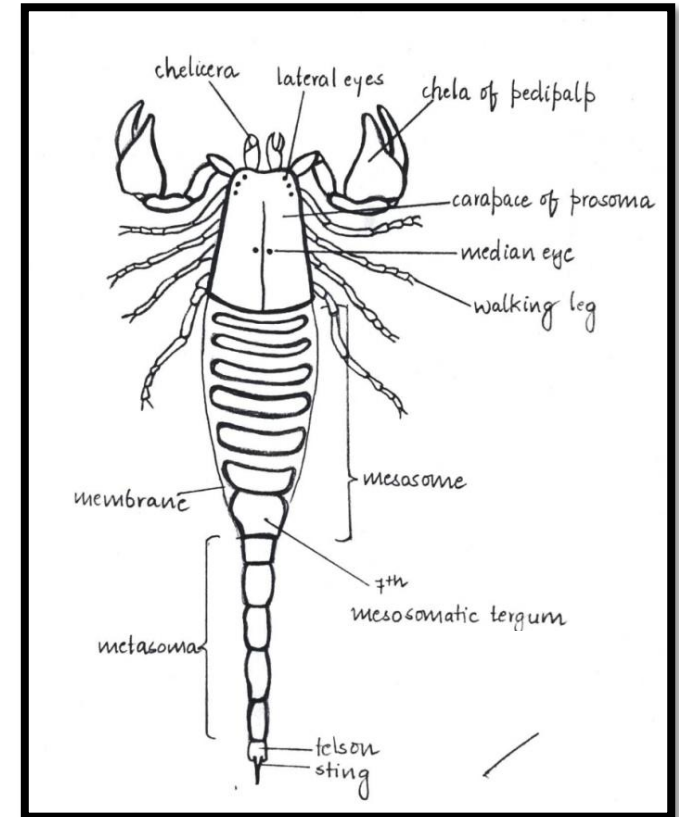
Class: Arachnida(four pairs of legs, specialized appendages, and a fused head and thorax.)

Genus: Palamnaeus



General Features:

1. Body is elongated, segmented and differentiated into anterior prosoma and posterior opisthosoma. Opisthosoma is sub-divided into a broad anterior mesosoma and a narrow posterior metasoma.
2. Prosoma is covered dorsally by a carapace and its appendages are a pair of small chelate chelicerae, a pair of large chelate pedipalps, 4 pairs of walking legs and several ocelli.
3. Body is encased in chitinous covering. The dorsal side covering is called as tergum, side one pleuron and ventral one sternum. Mesosoma is composed of 7 broad segments and metasoma of 5 narrow segments.
4. Last metasomatic segment is telson containing a sting. Ventrally the sternum of first mesosomatic segment contains a pair of genital openings. The second mesosomatic sternum bears a pair of sensory pectines, while third, fourth, fifth and sixth mesosomatic segments contain 4 pairs of bilateral stigmata, which are the openings of the respiratory booklungs.
5. Sexes are separate but without sexual dimorphism.



Palamnaeus

Palaemon

Common name: Prawn

Geographical distribution: Native to the Atlantic and Mediterranean (including the Black Sea) coasts of Europe, ranging from Norway to South Africa.

Scientific Classification-

Kingdom: *Animalia* ((Multicellular, eukaryotic, heterotrophic))

Phylum: *Arthropoda* (presence of jointed appendages)

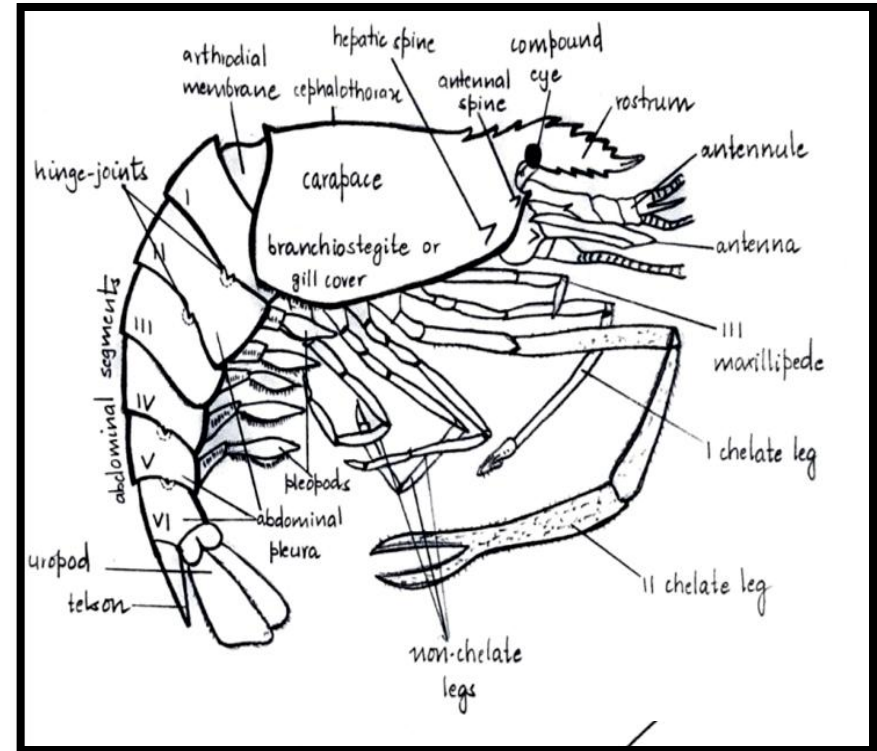
Class: *Malacostraca* (Cephalothorax, Carapace well formed/vestigial/absent, Stalked /sessile paired compound eye, Telson)

Genus: *Palaemon*



General Features:

1. Body is elongated, bilaterally symmetrical and deep orange coloured.
2. Head and thorax fused to form cephalothorax and the abdominal segment terminates into a pointed telson.
3. Cephalothorax contains 5 head and 8 thoracic segments. Carapace is anteriorly produced into saw-toothed rostrum. There are two prominent eyes on the head.
4. There are 19 pairs of appendages, 13 in cephalothorax and 6 in abdomen.
5. Sensory structures include compound eyes, statocysts along with certain tangoreceptors and chaemoreceptors.
6. Sinus gland is located at the base of eyestalk and secretes various kinds of hormones.
7. Sexes are separate and sexual dimorphism is well marked.
8. Development includes nauplius larva.



Palaemon

CANCER

Common Name : Crab

Geographic distribution: North Sea, North Atlantic Ocean, and Mediterranean Sea. These animals are found buried under rocks, wood pieces and in sand along sea shore.

Scientific Classification :

Kingdom : Animalia (Multicellular, eukaryotic, heterotrophic))

Phylum : Arthropoda (presence of jointed appendages)

Subphylum : Crustacea (two pairs of antennae, biramous limbs, green glands)

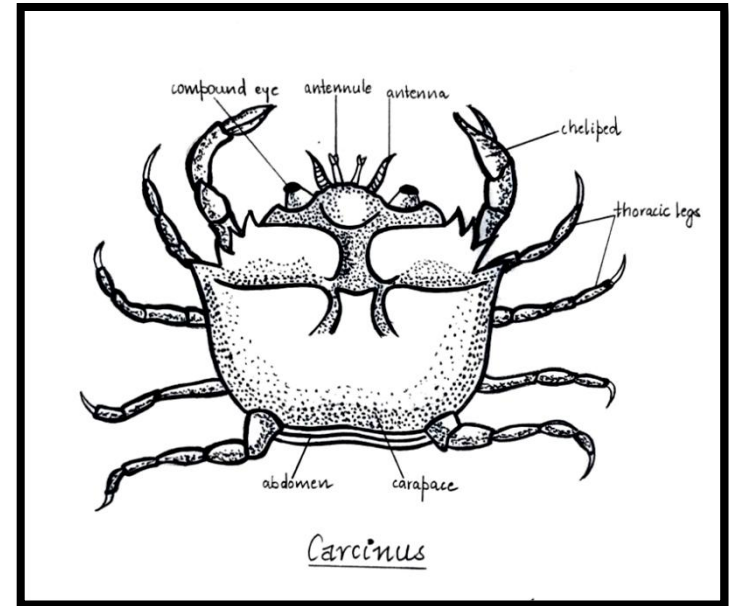
Class : Malacostraca (Cephalothorax, Carapace well formed/vestigial/absent, Stalked /sessile paired compound eye, Telson)

Genus : Cancer



General Features:

1. Body is flat and covered by a carapace. It is composed of a cephalothorax of 13 segments and abdomen is curved below the cephalothorax.
2. The carapace in callinectes is beautifully decorated and is produced into a pair of spines laterally.
3. The cephalothorax bears a pair of stalked compound eyes, a pair of small antennule and antennae.
4. Abdomen is reduced and flattened, movably articulated and is curved or flexed permanently in as groove below cephalothorax. It is composed of 6 segments and telson.
5. In males 2 pairs of pleopods are modified into a copulatory organ, whereas in females 4 pairs are present and are modified for carrying eggs.
6. Sexes are separate and development is indirect.



Carcinus

Eupagarus

Common Name : Hermit Crab

Geographical Distribution:

Scientific Classification :

Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum : Arthropoda (presence of jointed appendages)

Subphylum : Crustacea (two pairs of antennae, biramous limbs, green glands)

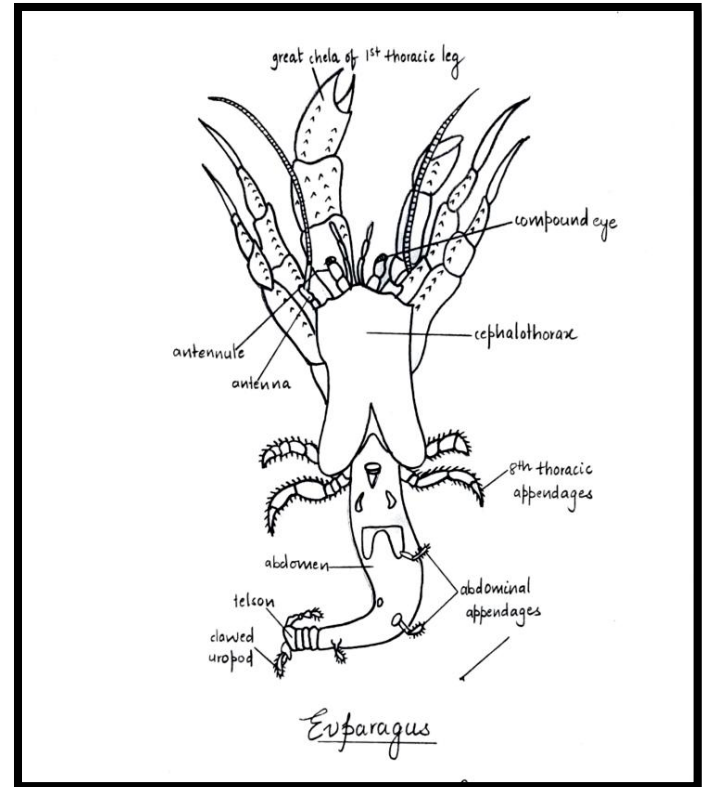
Class : Malacostraca (Cephalothorax, Carapace well formed/vestigeal/absent, Stalked /sessile paired compound eye, Telson)

Genus : Eupagarus



General Features:

1. Body is elongated, asymmetrical and is composed of cephalothorax and abdomen.
2. Cephalothorax is conical and is covered by a hard carapace.
3. The cephalothorax bears a pair of stalked compound eyes, a pair of biramous antennule and a pair of uniramous antennae.
4. Thoracic appendages are represented by 5 pair of walking legs of which first 3 are well developed and chelate and last 2 are greatly reduced. The first pair of walking leg bears unequal chela, used for closing shell aperture.
5. The abdomen is smooth, sharply curved, unsegmented and bears 3 greatly reduced pleopods, a stumpy telson and a pair of small uropods.
6. Young stage of the animal enters the gastropod shell and makes the shell its permanent abode.
7. Sexes are separate and development is indirect.



Euparagus

Daphnia

Common Name : Water flea

Geographical distribution: It is broadly distributed throughout the Northern Hemisphere and South Africa.

Scientific Classification :

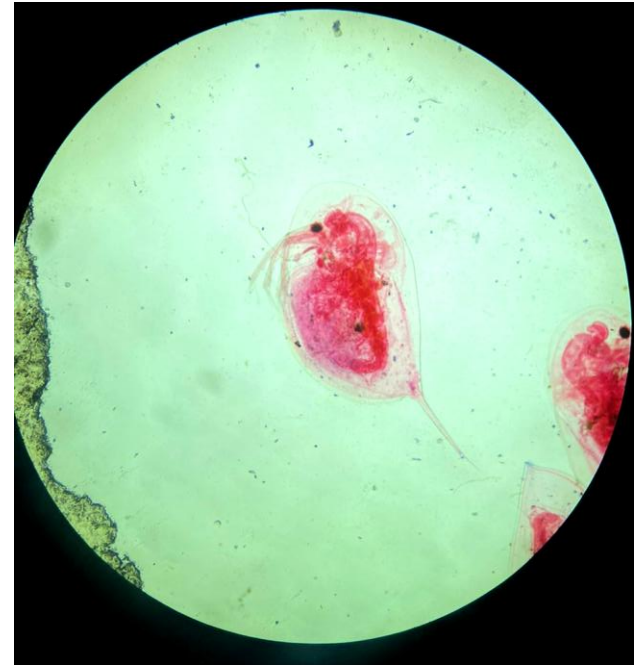
Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum : Arthropoda (presence of jointed appendages)

Subphylum : Crustacea (two pairs of antennae, biramous limbs, green glands)

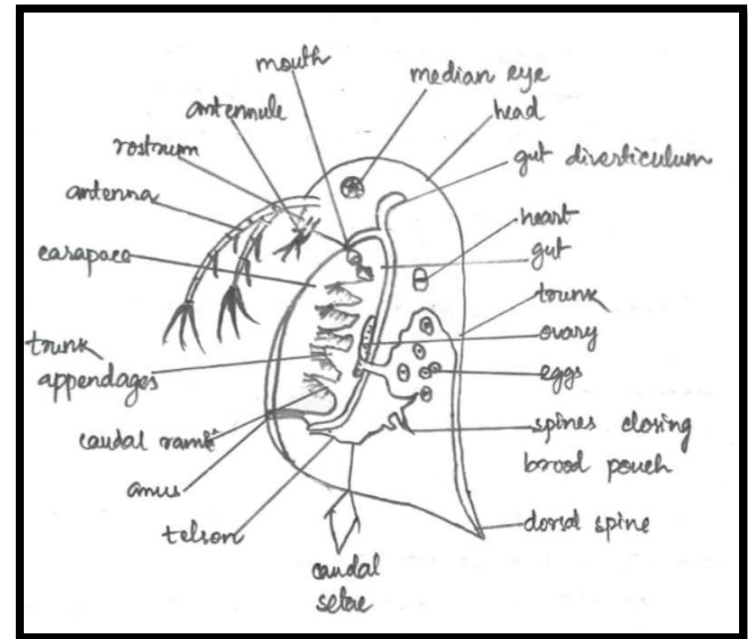
Class : Branchiopoda (Leaflike appendages, filter feeder, zooplankton)

Genus : Daphnia



General Features:

1. Body except the head is enclosed in a bivalved shell or a large fold of carapace.
2. Body is soft, laterally compressed measuring 1-2 mm in length.
3. Segmentation is very imperfect.
4. Carapace ends into a pointed dorsal spine.
5. Head is rounded and bears a pair of large biramous antennae, a pair of small antennular and a compound sessile eye.
6. Large biramous antennae are chief organ of locomotion.
7. Thorax bears usually five pairs of leaf like appendages.
8. Abdomen is devoid of appendages.
9. Sexes are separate.
10. In a stained slide, heart, gut and gut diverticulum, sex organs and eggs are seen



Daphnia

Balanus

Common Name : Common rock barnacle

Geographical distribution: It is found in the Arctic Ocean and the more northerly seas of the northern hemisphere

Scientific Classification :

Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum : Arthropoda (presence of jointed appendages)

Subphylum : Crustacea (two pairs of antennae, biramous limbs, green glands

Class : Cirripedia (maxillopod tagmata with five cephalic, six thoracic and usually four abdominal somites and a telson.)

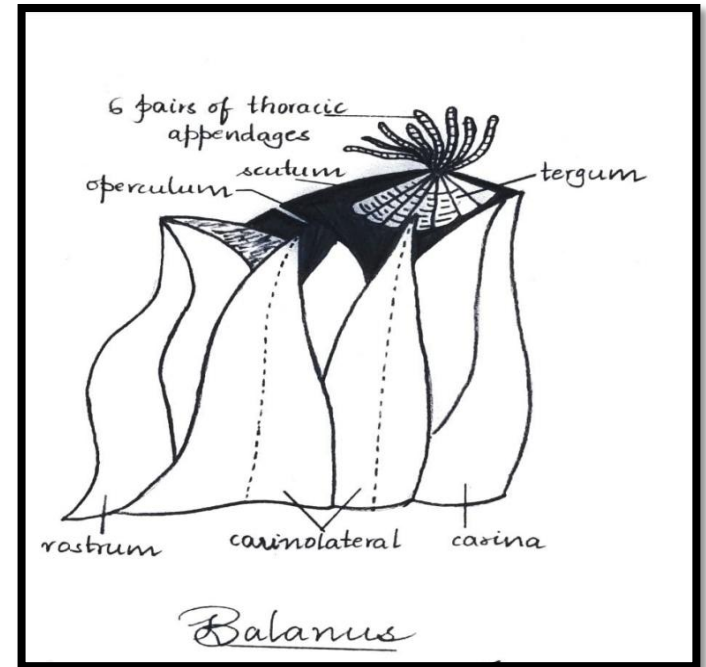
Genus : Balanus



Balanus

General Features:

1. It is a sessile organism, blind and found in sea attached to rocks or stones.
2. Body is surrounded by hard calcareous shell comprising of two pairs of carino lateral plates on lateral sides, an unpaired median rostrum above and an unpaired median carina below.
3. The cephalic appendages include mandibles and maxillae.
4. The thorax has no segmentation but bears six pairs of biramous appendages.
5. Abdomen almost absent but a minute caudal ramus is present near the penis representing the abdomen.
6. An unpaired compact ovary is situated at the base of stalk.
7. Highly branched testis lies in the thoracic region.
8. Free swimming nauplius larva is seen.



Balanus

Periplaneta

Common name: Cockroach

Geographical Distribution: It is found in India, Asia and U.S.A. It has original home in Mexico but has travelled with man to all parts of the world. They flourish chiefly in tropical damp forests but occur throughout the world.

Scientific Classification-

Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum: Arthropoda (presence of jointed appendages)

Sub Phylum: Uniramia (single branching appendages, 1 pair of antennae)

Class: Insecta (Air breathing, terrestrial or aquatic, body divisible into head)

thorax and abdomen.

Genus: Periplaneta

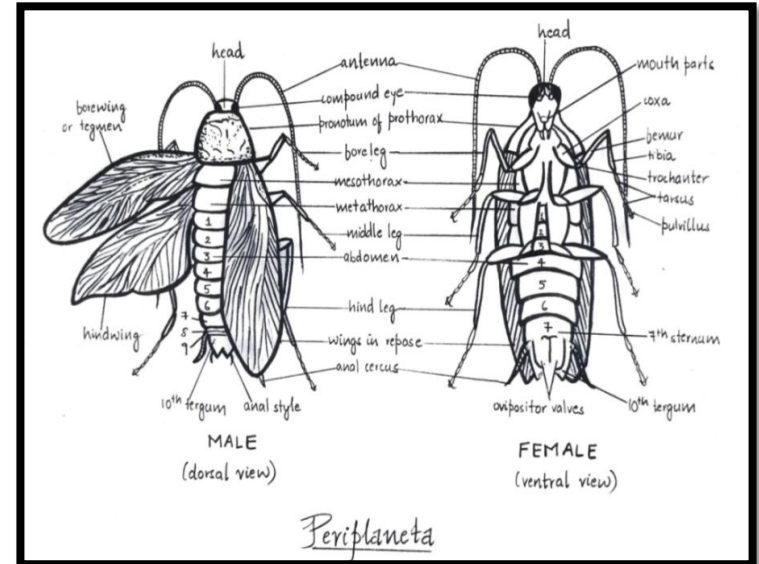


General Features:

- 1) Body reddish brown in colour measuring 2.5 cm in length.
- 2) Body elongated bilaterally symmetrical dorsoventrally flattened.
- 3) Body divided into head, thorax and abdomen.
- 4) Head contains a pair of long sensory antennae and pair of compound eyes.
- 5) Thorax divisible into prothorax, mesothorax and metathorax, contains three pairs of walking legs, 2 pairs of wings
- 6) Male and female cockroaches are distinguished by the appendages in 10th abdominal segments.
- 7) Male cockroach has a pair of segmented anal cerci on sides and a pair of unsegmented anal styles in 10th abdominal segment.
- 8) Female cockroach has anal cerci and ovipositor valves.

Additional Resource:

http://entnemdept.ufl.edu/creatures/urban/roaches/american_cockroach.htm



Periplaneta

Common Name: Honeybee

Geographic Distribution: Cosmopolitan. Honeybee is commonly found in India, Europe and Africa.

Scientific Classification-

Kingdom: *Animalia* (Multicellular, eukaryotic, heterotrophic)

Phylum: *Arthropoda* (presence of jointed appendages)

Sub Phylum: *Uniramia* (single branching appendages, 1 pair of antennae)

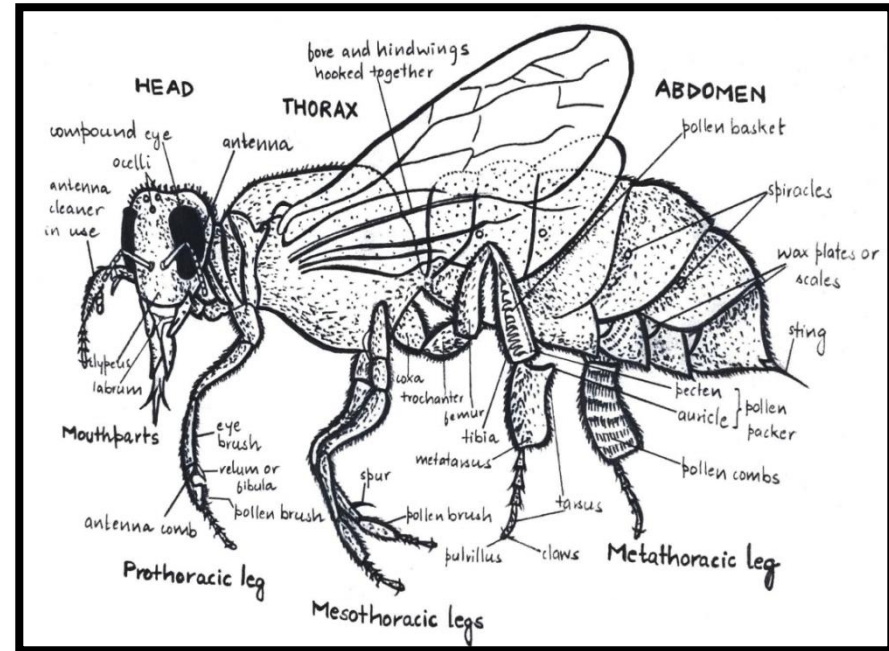
Class: *Insecta* (Air breathing, terrestrial or aquatic; body divisible into head, thorax and abdomen; three pairs of legs; two pairs of wings)

Genus: *Apis*



General Features:

1. Honey bee is a social insect and lives in a highly organized colony in beehive.
2. It's different species are *A. dorsata* (Rock bee), *A. flora* (Little Indian bee), *A. indicate* (Indian bee), *A. mellifera* (European bee), *A. adamsoni* (African bee).
3. It's colony isThe individuals of a colony consist if a functional female and one queen, males or drones and sterile workers or females.
4. The worker bees are the largest number of the colony which develop from fertilized eggs.
5. It's body had three distinct regions; head, thorax and abdomen.
6. Mouthparts are chewing and lapping type.
7. The ovipositor of worker bee is modified into sting.
8. The queen is larger in size having longer abdomen and it's duty is to lay eggs.



Honey Bee

Additional Resource:

<https://www.youtube.com/watch?v=9ePic3dtykk>

Queen Termite

Geographic Distribution: Cosmopolitan in distribution. Queen termite is found throughout tropical and temperate countries.

Scientific Classification-

Kingdom: Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum: Arthropoda (presence of jointed appendages)

Sub Phylum: Uniramia (single branching appendages, 1 pair of antennae)

Class: Insecta (Air breathing, terrestrial or aquatic; body divisible into head, thorax and abdomen; three pairs of legs; two pairs of wings.)

Genus : Queen Termite

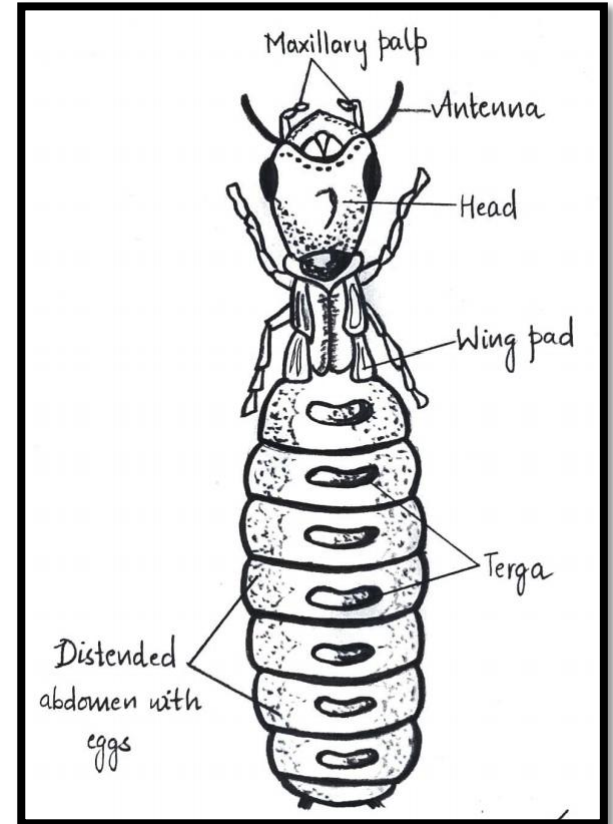


General Features:

- 1) Queen Termite is the sexually mature female of the colony.
- 2) Body is elongated and cylindrical. It is divisible into head, thorax and abdomen.
- 3) Head and thorax are comparatively small.
- 4) Abdomen is enormously swollen to accommodate the large number of fertilised eggs.
- 5) It lays eggs at the rate of 60 per minute.
- 6) Compound eyes are well developed.
- 7) Mouth parts are biting type.
- 8) Social and polymorphic forms exhibiting caste system.
- 9) Colony comprises sexually mature males and females(kings and queens), sterile workers, soldiers and nasutes.
- 10) They feed upon cellulose of wood.

Additional Resource:

<https://www.termiteweb.com/the-termite-queen>



Queen Termite

Scolopendra

Common Name : Centipede

Geographical distribution: It is also found on virtually all land areas around and within the Indian Ocean, all of tropical and subtropical Asia from Russia to the islands of Malaysia and Indonesia, Australia, South and Central America, the Caribbean islands

Scientific Classification-

Kingdom:Animalia (Multicellular, eukaryotic, heterotrophic)

Phylum : Arthropoda (presence of jointed appendages)

Subphylum : Uniramia (single branching appendages,
1 pair of antennae)

Class : Chilopoda (Legs one pair on each trunk segment)

Genus : Scolopendra



General Features:

1. These animals are poisonous in nature.
2. They are swiftly moving, carnivorous, nocturnal and are commonly hidden in dark and damp places under logs, crevices, etc..
3. Body is elongated and flattened dorsoventrally and is generally comprised of about 21-23 segments.
4. Body is divisible into head and trunk. The head bears a pair of jaws and 2 pairs of maxillae.
5. All the trunk segments except the last 2 and one just behind the head, bear a pair of jointed appendages, a pair of jointed appendages .
6. Respiration through branched trachea and excretion through 2 malphigian tubules.
7. The sexes are separate and genital openings are situated at the hind end of body.
8. Centipede venom is made up of several substances including histamine, serotonin, cardiotoxin and quinoline alkaloid.



Scolopendra

Julus

Common name: Millipede

Geographical distribution: Julus is cosmopolitan in distribution. Lives in dark and damp places in meadows and gardens under stones and bark of dead trees.

Scientific Classification-

Phylum: Arthropoda – (Triploblastic, metamerically segmented; jointed appendages, body cavity haemocoel)

Sub phylum: Uniramia (Terrestrial, appendages unbranched)

Class: Diplopoda (Trunk bears numerous segments, each of which bears two pairs of legs, poison jaws absent)

Genus: Julus

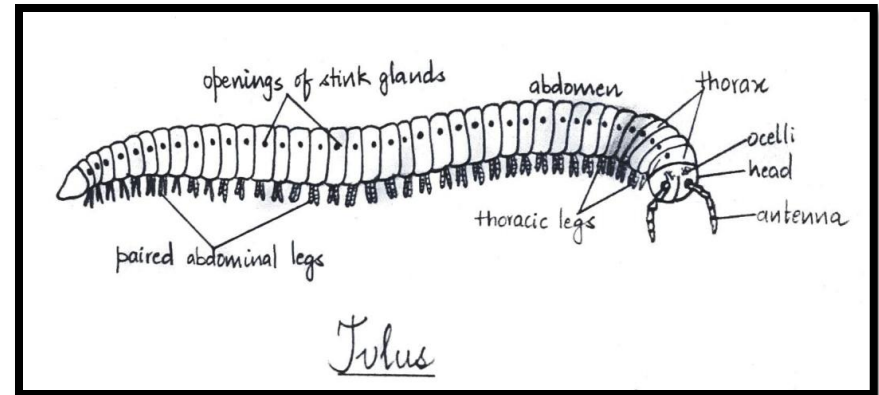


General Features:

1. Body is elongated and cylindrical, consisting of a large number of segments; the colour may be yellowish brown or reddish chestnut.
2. Body is divisible into head, thorax and abdomen.
3. Head consists of five segments, thorax of four segments and abdomen of 20-100 segments.
4. Head bears a pair of short seven jointed antenna, a pair of mandibles and a pair of maxillae forming gnathochilarium.
5. 6) Thoracic segments with one pair of legs in each, while abdominal segments bears two pairs of legs.
6. Poison claws absent.
7. Stink glands present along the sides of the body, secreting noxious substance.
8. Sexes separate, gonopores mid- ventrally situated on 3 rd abdominal segment.
9. Herbivorous in food habit.

Additional Resource:

<https://www.britannica.com/animal/Julus>



Julus