

Morphology- Crab



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Crab

- The crabs are of several types and vary in size, shape and colouration.
- The crabs may be marine and fresh-water.
- Though its body is adapted for aquatic respiration, it may live for a considerable period on land.
- The crabs dig burrows on the shores or banks of rivers and ponds.
- On land the true crabs do lateral movement with the help of walking legs.
- Some crabs which live mostly in water have appendages more adapted for swimming.



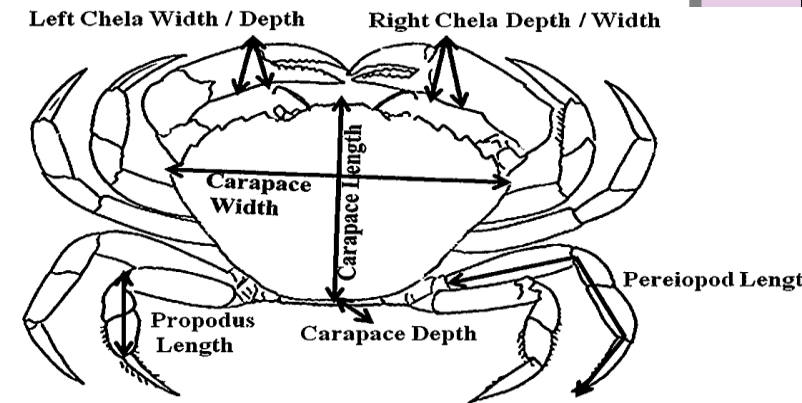
Morphology- Crab

- The body is more or less oval in outline and the breadth is greater than the length.
- The body of true crab is divisible into cephalothorax and abdomen.

- Crabs have a hard outer covering called an exoskeleton made of chitin

- This exoskeleton provides protection from predators and the rigors of the physical environment (like cold, heat dryness, etc.)

- It also serves as the basis for the attachment of the muscle system



- Technically their body is divided into two main parts –
 - the cephalothorax and
 - the abdomen
- In crabs, the abdomen is the flap that is flexed underneath the body.

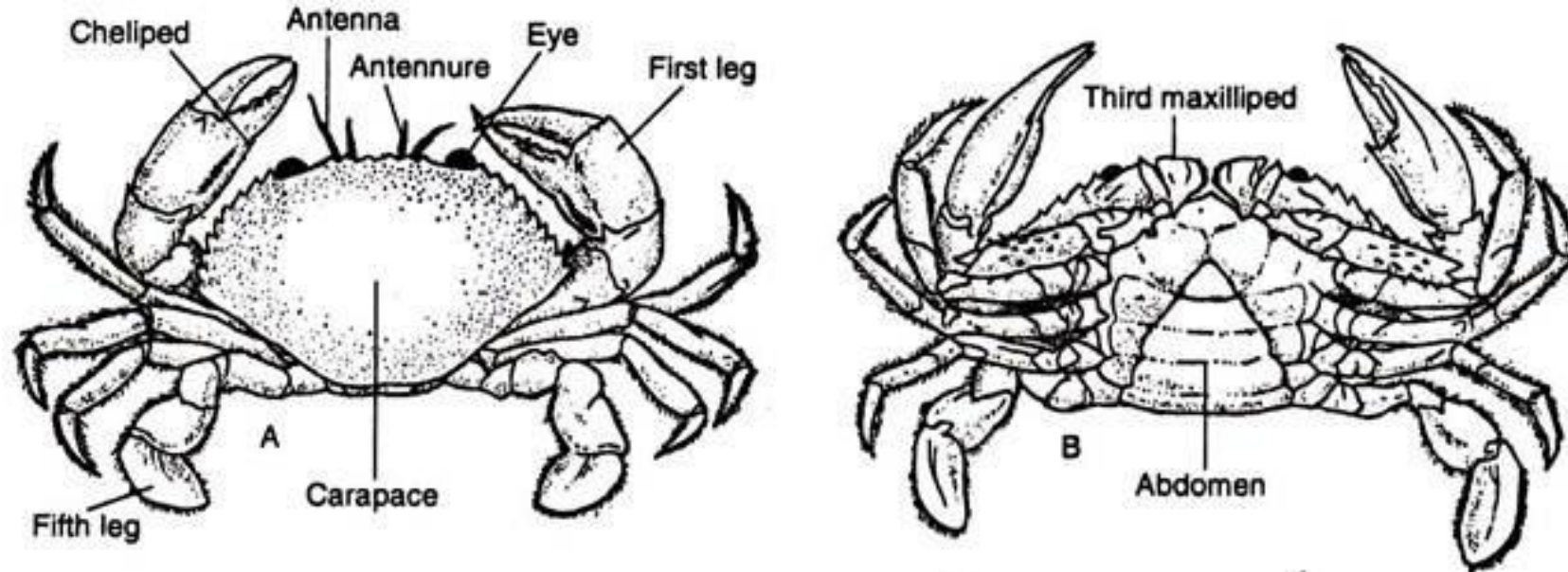
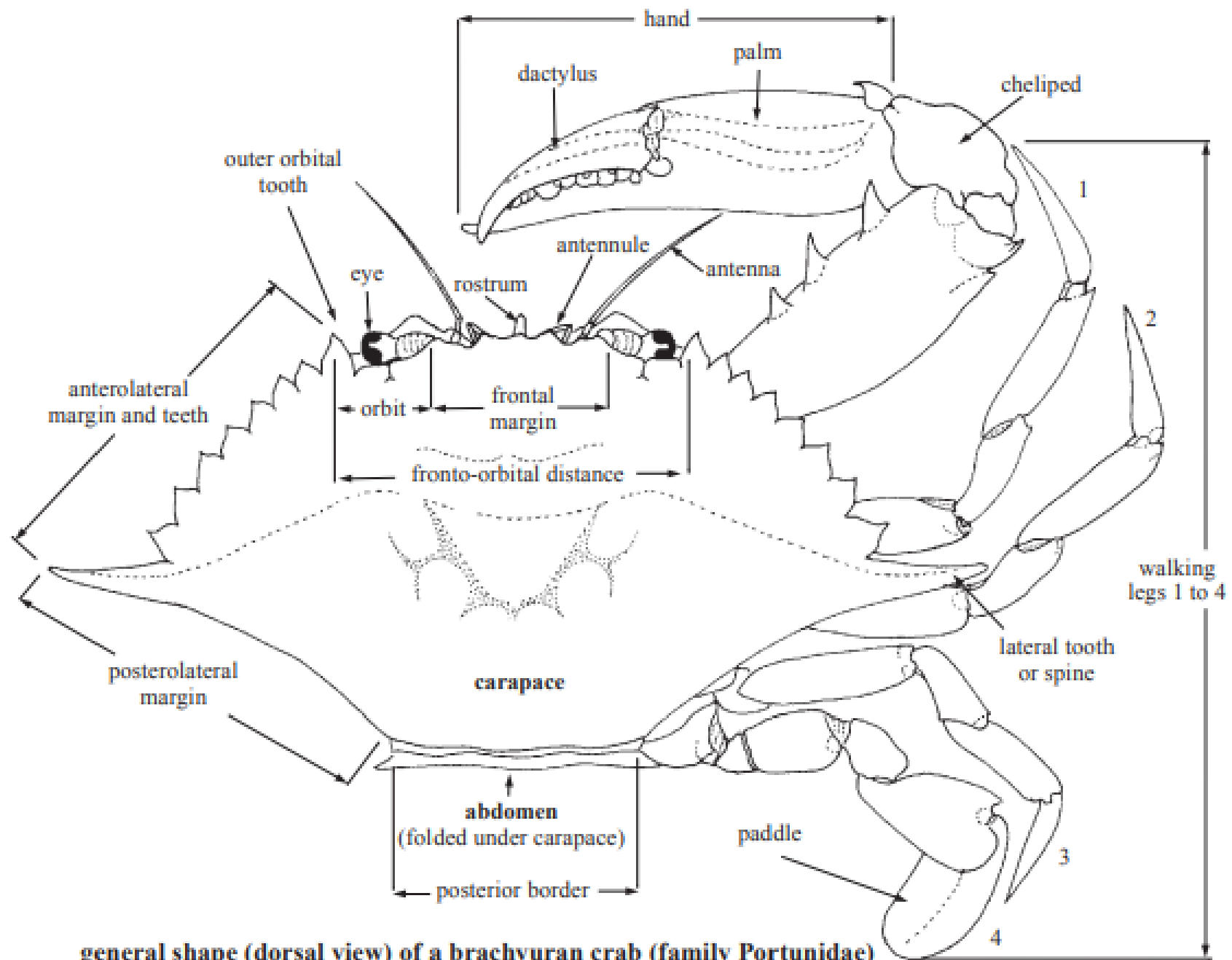


Fig. 18.18: External features of a true crab. A. Dorsal view. B. Ventral view.

TECHNICAL TERMS AND MEASUREMENTS



general shape (dorsal view) of a brachyuran crab (family Portunidae)

Cephalothorax

- The cephalothorax (cephalic+ thoracic) consists of the cephalic (or head) region and the thoracic (or chest) region.
- The hard dorsal and lateral covering of the head and thorax of the body is also called the **carapace**
- This is the most prominent part in the true crab and is covered dorsally by a flat broad and oval carapace which is made up of fused **tergites**.
- The anterior and lateral margins of the carapace are semi-circular and spiny.
- The ventral side of the cephalothorax is covered by **sternites** and its lines of fusions are well- marked.

- Cephalothoracic and abdominal -13 segments
 - Cephalic- 5
 - Thoracic- 8
 - Abdominal-6
- Head bears the compound eyes (usually stalked)
- **Cephalothorax**
 1. Antennule
 2. Antenna
 3. Mandible,
 4. 1st maxilla
 5. 2nd maxilla
 6. 1st maxilliped
 7. 2nd maxilliped
 8. 3rd maxilliped).

Five pairs of walking legs

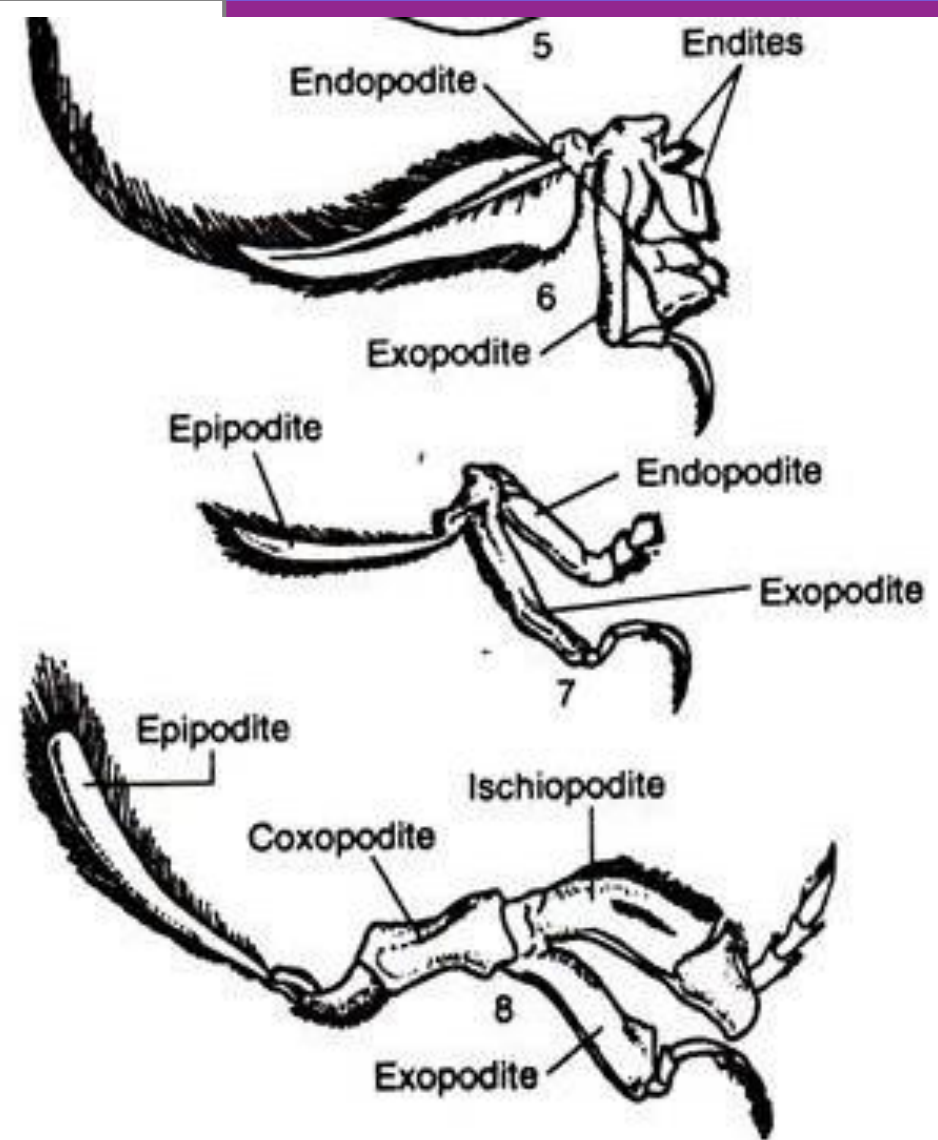
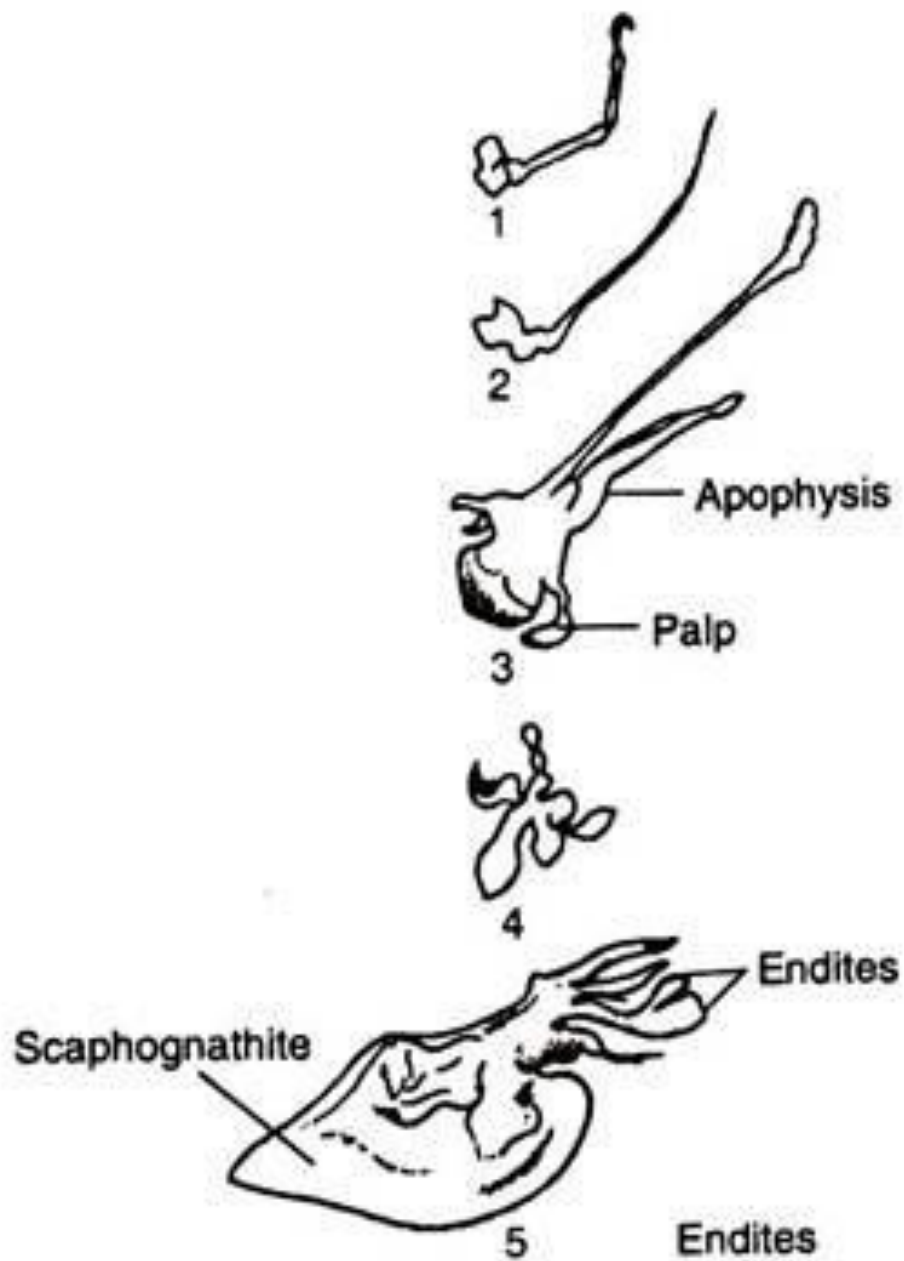
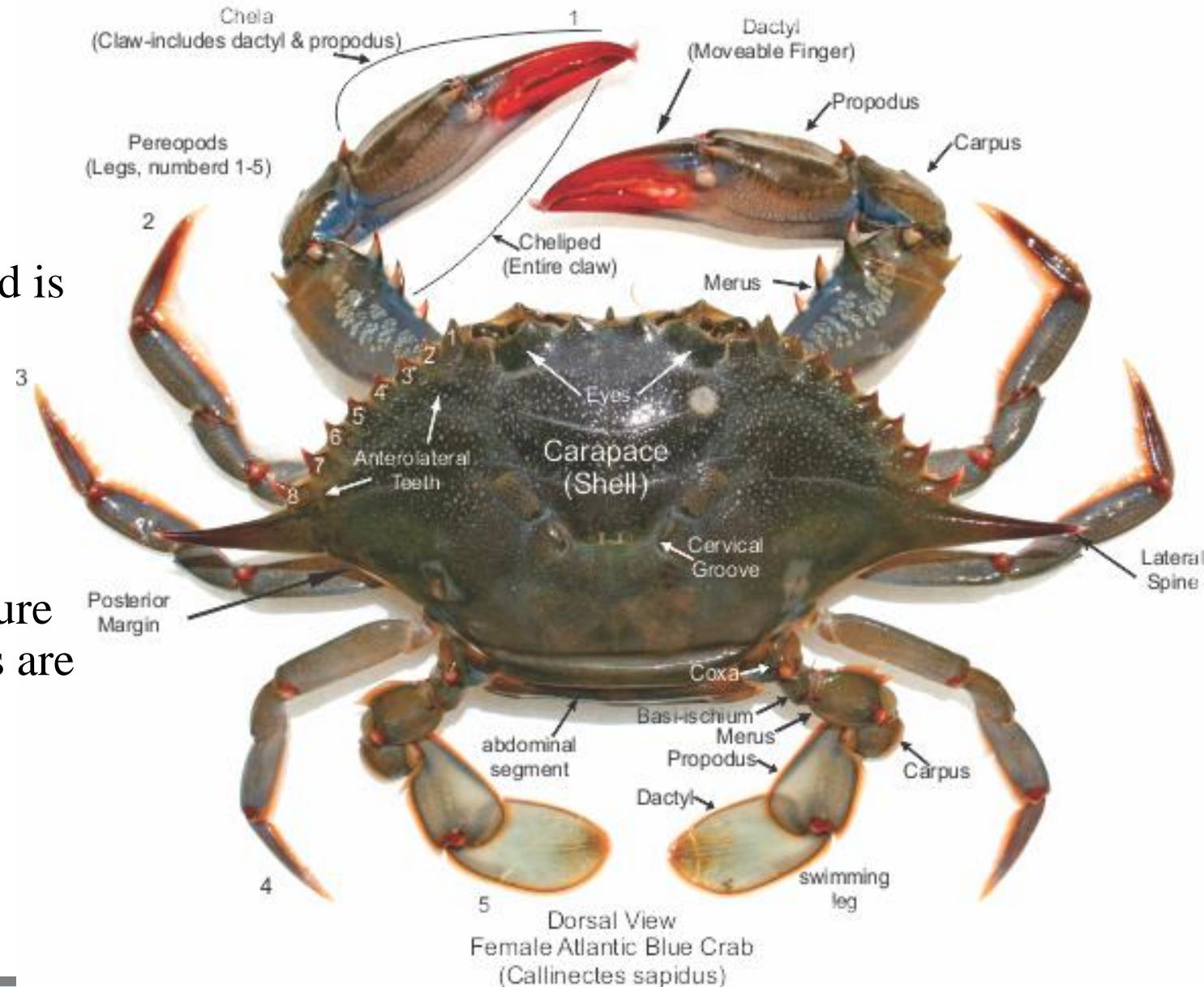


Fig. 18.19: First eight appendages of a true crab (from one side only). 1. Antennule. 2. Second antenna. 3. Mandible. 4. First maxilla. 5. Second maxilla. 6. First maxilliped. 7. Second maxilliped. 8. Third maxilliped.

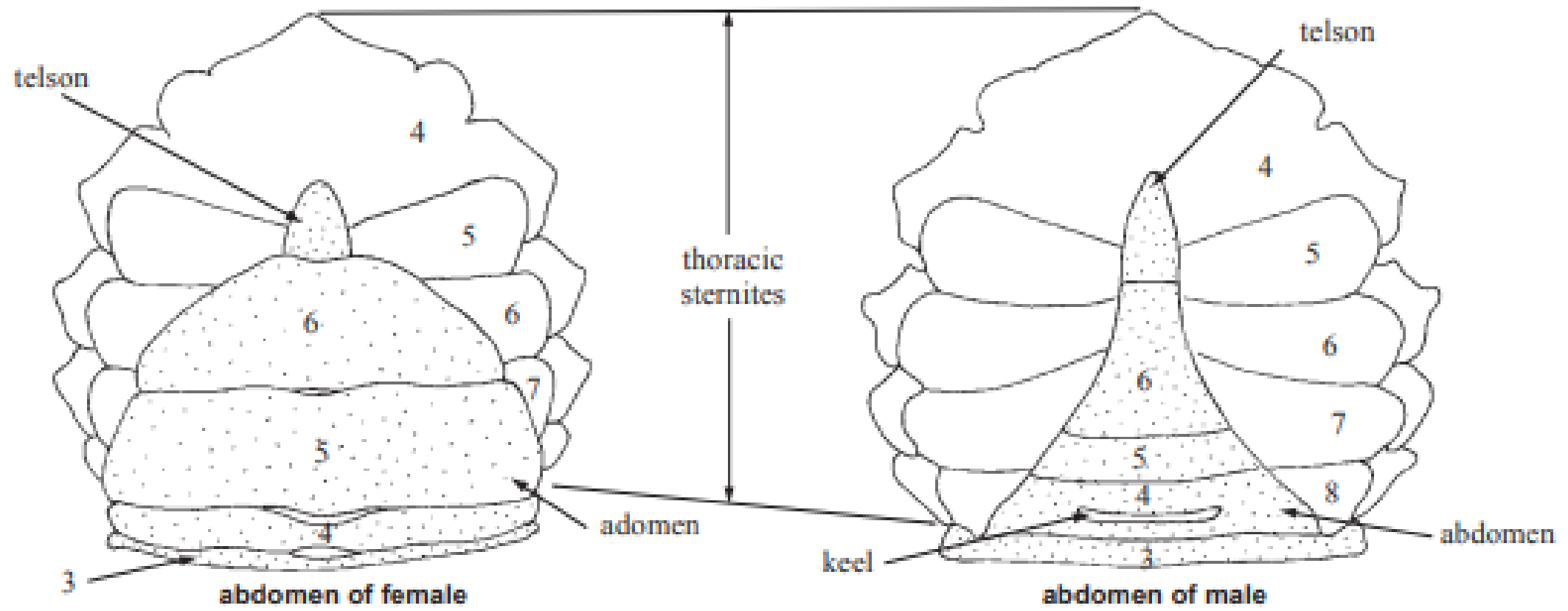
Blue Crab Anatomy (exterior)

- Five pairs of walking legs,
 - the first pair is well-developed and is provided with powerful chela.
 - The other legs are non chelated.
 - The first leg is used for food capture and defense, while the rest of legs are meant for walking sideways.

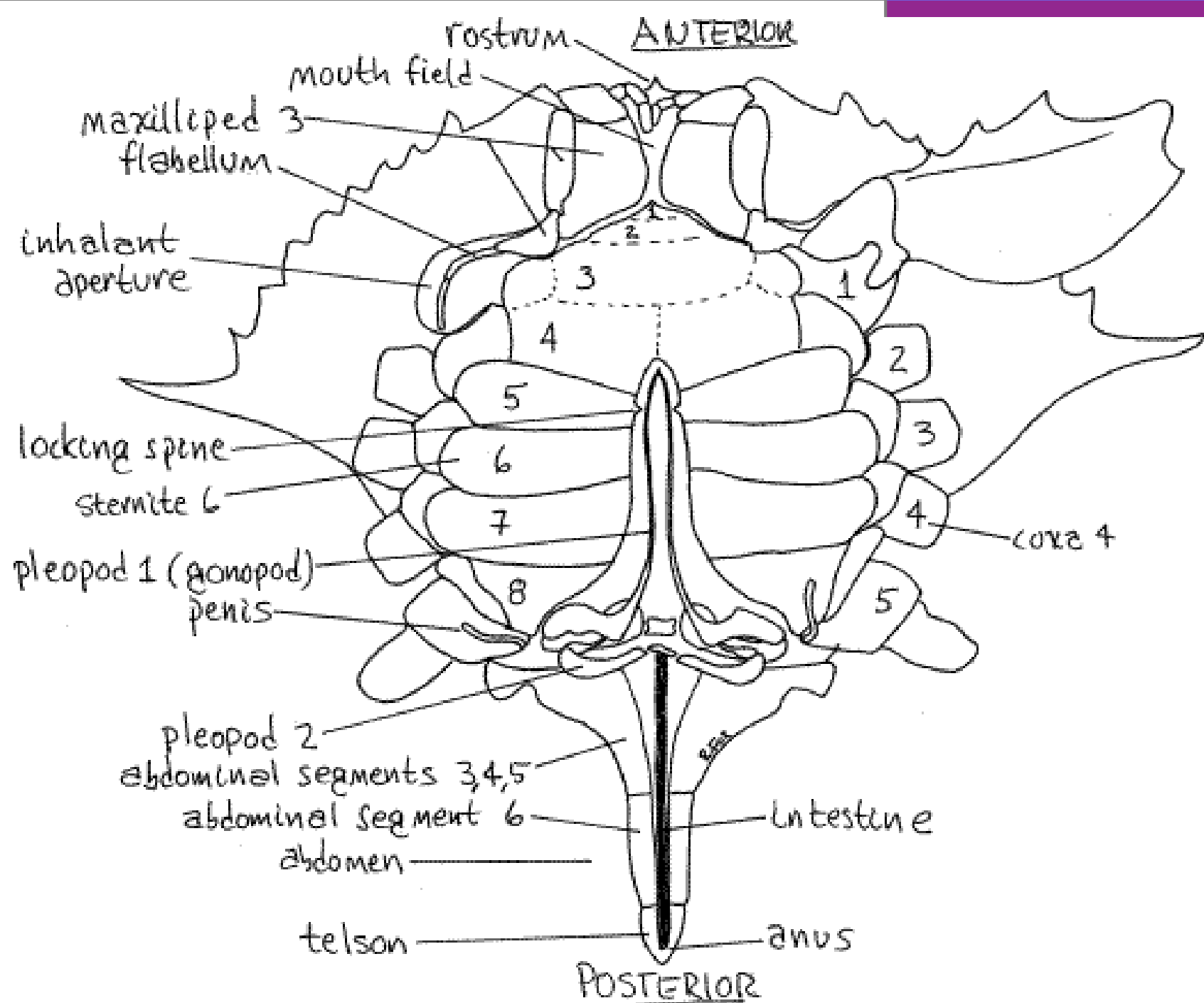


Abdomen

- The abdomen is also called the **pleon**, its segments are pleomeres, and its appendages are **pleopods**.
- The abdomen is six segmented, flap-like and much thinner in comparison to the cephalothorax.
- It remains flexed in the ventral side of the cephalothorax within a groove formed by sternites.
- The abdominal appendages or **pleopods** are rudimentary.
- Sixth pair of pleopods is absent in both the sexes.



thoracic sternum and abdomen (ventral view)

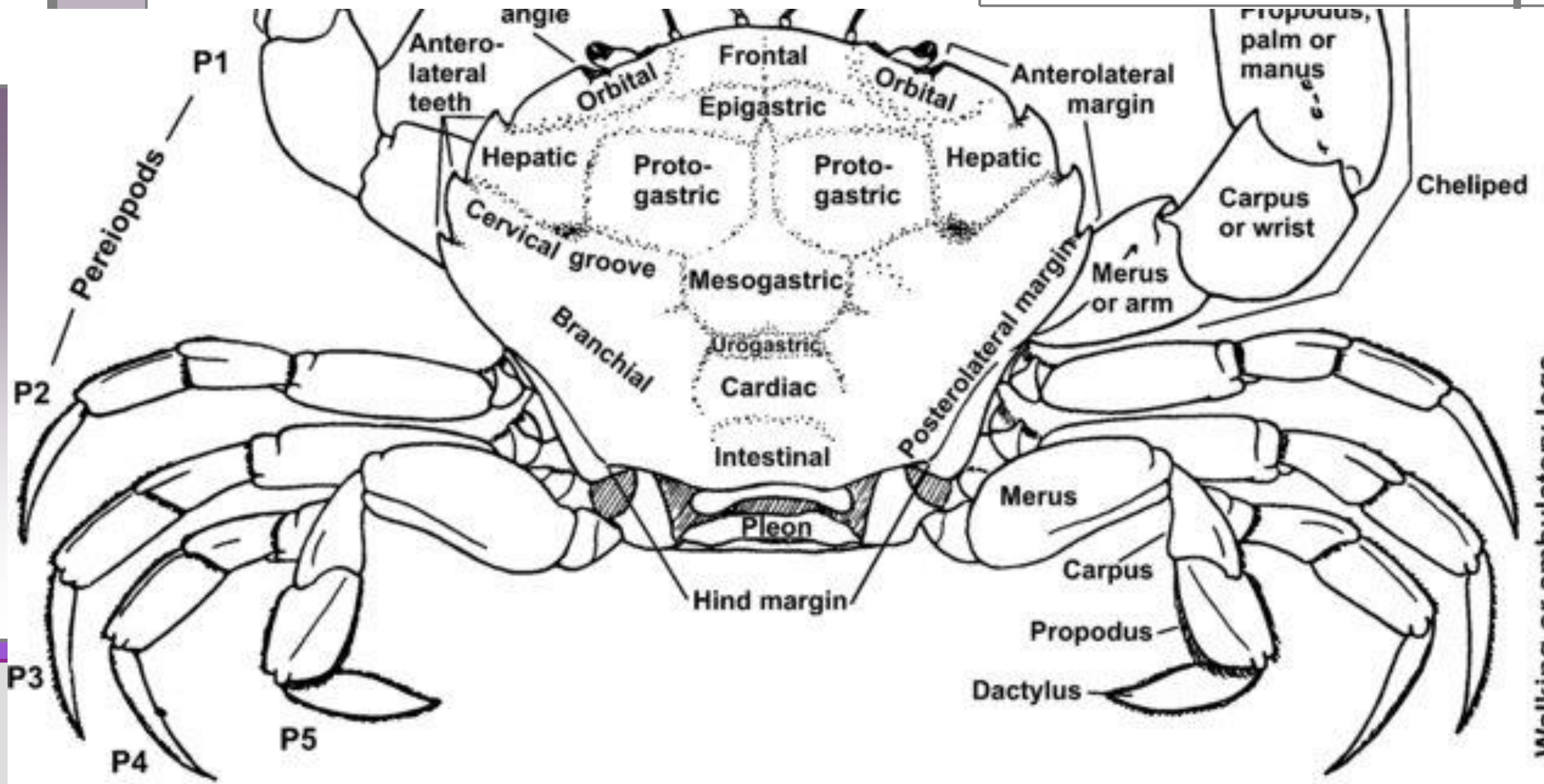


Pleopods-Male

- The pleopods are sexually dimorphic
- Males have only two pairs of pleopods and they are located anteriorly on the abdomen, on segments 1 and 2
- Both function in the transfer of sperm to the female during copulation.
- They are hidden under the flexed abdomen, which must be extended to reveal them.
- The long, curved, tubular **first pleopod** is the **gonopod**.
- It, not the penis, is the **intromittent organ** used to deliver spermatophores to the female gonopore.
- The **second pleopod** is much smaller and functions as a piston to push spermatophores through the hollow core of the gonopod.

Pleopods-Female

- Females have paired biramous pleopods on abdominal segments 2-5 and, as in the male, they are hidden under the flexed abdomen which must be extended to reveal them.
- The first article, or coxa of a female pleopod is attached to the body by a soft and flexible **articulating membrane**.
- The coxa is small and poorly calcified but the next article, the **basis**, is large and conspicuous.
- Two **rami**, the **exopod** and **endopod**, arise from the basis.
- After release from the gonopores, the eggs attach to the long **setae** of the pleopods where they are ventilated by movements of the abdomen and the pleopods.



Walking or ambulatory legs

| | Common Name | Function |
|----------------------------------|-------------------------------|--|
| Cephalic | Head | Contains a few nerve cell clusters (cerebral ganglion or ganglia). |
| Rostrum | Beak or nose | Additional protection of eyes |
| Thoracic | Chest, Carapace or Upper body | Protection of inner organs. |
| Antennae | Long whiskers | The sensor of orientation and coordination. |
| Antennule | Short whiskers | The sensor of chemical information (food, gender discrimination, etc.) |
| Maxillae | Jawfoot | Help to eat and to draw water over the gills. |
| 1st, 2nd, 3rd Maxillipeds | Jawfoot | Eating (rummage and bring food to the mouth). |
| Mandibles | Jaws | Hard, powerful cutting jaws. |
| Pereiopods | Walking legs | Movement |
| Chelipeds | Claws | Holding and picking food. Defense and/or aggression. |
| Eyes | Eyes | Vision |

| 7 Abdominal segments | Stomach | Protection of inner organ |
|----------------------|---------|---------------------------|
| Telson | Tail | Movement (coordination) |
| | | |