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Reproductive systems of commercially important crustaceans and molluscs

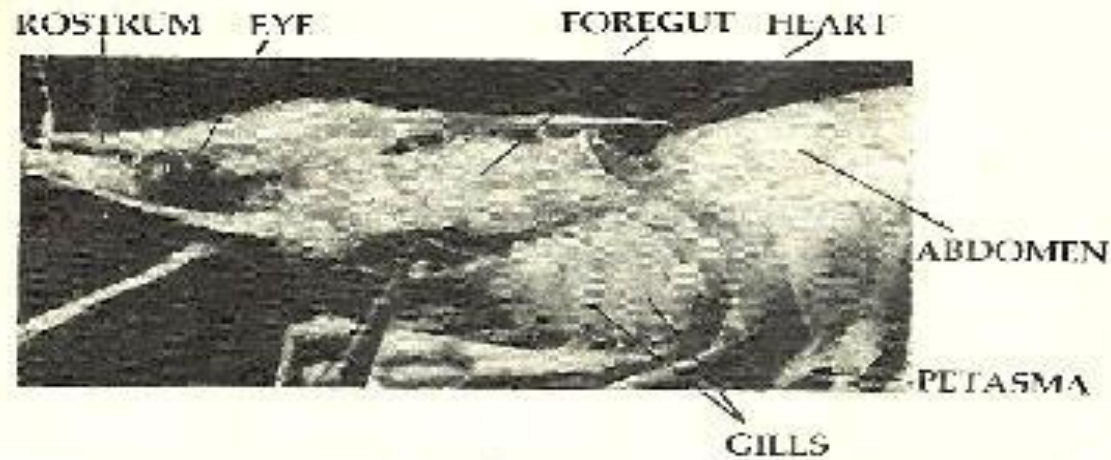
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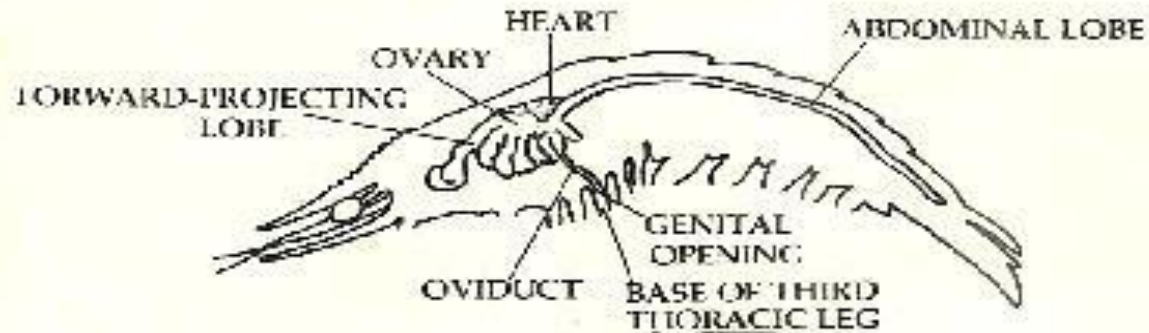
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Shrimp- Female reproductive system



Preserved, partially dissected specimen of white shrimp, showing gill bailer (at tip of forceps) and gills in left branchial chamber, also petasma (male copulatory organ).



Female reproductive system of white shrimp, lateral view.
(After King)



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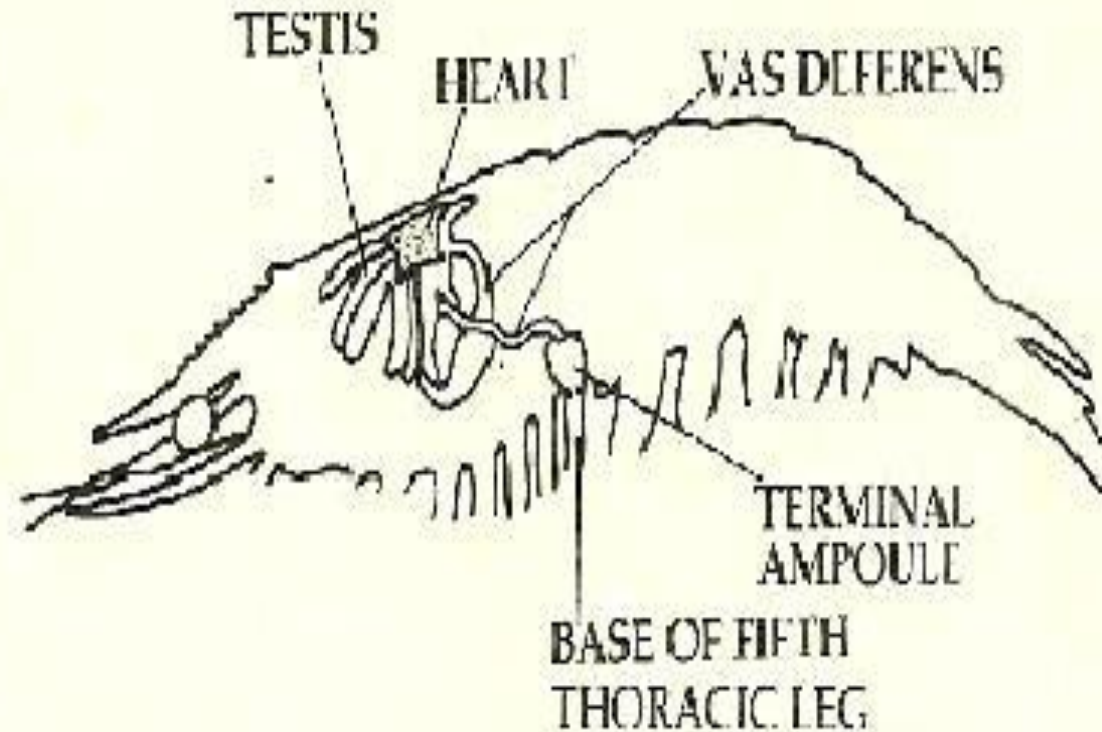
- ❖ Most conspicuous components of the female reproductive system are two ovaries that extend, partially fused, from the anterior of the foregut posteriorly to the tail fan.
- ❖ The portion of each ovary that is within the cephalothorax consists of a forward-projecting lobe, which lies close to the esophagus and chambers of the foregut, and seven finger-like lateral lobes, which are situated above the midgut gland and beneath the heart.
- ❖ This arrangement makes the heart resemble a saddle straddling the ovaries. The abdominal portion of the ovaries consists of two lobes, lying above and to the sides of the intestine and below and to the sides of the dorsal abdominal artery.



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Shrimp- Male reproductive system



Male reproductive system of white shrimp, lateral view.

(After King)



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- ❖ The spermatophore of the white shrimp roughly resembles a pod. It consists of two halves, each of which contains sperms enclosed within a sheath and surrounded by chitin.
- ❖ The thoracic legs of the male shrimp presumably assemble the spermatophore immediately after each half is expelled from the terminal ampoule of the corresponding vas deferens.
- ❖ The legs place the spermatophore within the trough of the petasma, a structure that results from modification of the first pair of pleopods.
- ❖ The petasma consists of stiffened longitudinal rods and folds of soft chitin that, when unfolded, result in a broadly inflated male copulatory organ.



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Lobster- Female Reproductive System

- ❖ In the American lobster the ovaries of the female appear in the form of a letter H, with the cross bar at the forward margin of the heart and with longitudinal lobes extending forward and backward through much of the animal.
- ❖ The stage of ovarian development is apparent from the color, bright yellow or flesh-colored early in development, then salmon, light green, and finally a rich dark green by maturity.
- ❖ After cooking, the mature, egg-filled ovaries are bright red and are known as the coral.



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From the ovaries, paired ribbon-like oviducts emerge at a level just below the heart, then quickly narrow as they run outward to the body wall and downward to the base of the third pair of thoracic legs, where they terminate on the inner surface of the basal segment.

Externally and medial these openings is a triangular, bluish structure extending from the base of the third to just beyond the base of the fourth pair of thoracic legs.

- ❖ This is the seminal receptacle, a small pocket in the exoskeleton that receives sperms from the male during mating.



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Lobster- Male Reproductive System

- ❖ In males of the American lobster the testes, which are pale tan-grey in color, may be H-shaped, like the ovaries of the female, or longitudinally paired, without a cross bar.
- ❖ From the testes, paired ducts, the vasa deferentia, emerge beneath the heart, at approximately the same place that the oviducts emerge from the ovaries.
- ❖ Like the oviducts, the vasa deferentia run outward to the body wall before turning downward.



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- ❖ At this point they become S-shaped, with their posterior margin thickened and glandular, capable of secreting a gelatinous material that coats the sperms as they pass through the duct.
- ❖ The vasa deferentia then become briefly bulbous and muscular and, following this, narrow and thin-walled, forming an ejaculatory duct that opens at a papilla on the inner surface of the base of the fifth (and last) pair of thoracic legs.



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Loligo

- ❖ The sexes are separate.
- ❖ There is a single gland lying ventrally in the apical region of the visceral mass, and opening directly into the coelom by a slit.
- ❖ A single gonoduct runs on the left from the coelom to the mantle cavity and opens near the funnel.



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- ❖ The male reproductive system includes a testis, a vas deferens, a spermatophoric sac containing sperm packets or spermatophores, and a copulatory organ or penis.

- ❖ The female reproductive system comprises of an ovary, an oviduct, an oviducal gland, and a part of nidamental glands, which produce a jelly in which the eggs are embedded.