Abdomen of Insects

- **Abdomen :⇒** The 3rd and posterior tagma of Insect is known as abdomen.
  - ✓ It is made up of 9-11 uromeres.
  - ✓ Abdominal segments are telescopic in nature and interconnected by a membrane called conjunctiva.
  - ✓ Each abdominal segment is made up of only two sclerites — (a) dorsal body plate – Tergum and (b) the ventral body plate - Sternum.
- The abdominal appendages in adult insects are genital organ and cerci.
- **Function of Abdomen :⇒**
  The function of abdomen is concerned with the reproduction and metabolism like Respiration Excretion and Reproduction.

Abdominal Structures in Insects

Basic Structures :⇒

The basic number of abdominal segments in insect is nine to eleven and a telson which bears anus. The abdominal segments are called uromeres. on 8th and 9th segment of female and 9th segment of male, the appendages are modified as external organs of reproduction or genitalia. These segments are known as genital segment. Usually 8 pairs of ~~small~~ spiracles are present on the first eight abdominal segments.

modifications : ⇒

Reduction in number of abdominal segments has taken place in many insects.

i) In springtail only 6 ~~to 9 are~~ segments are present.

ii) In housefly only segments 2 to 5 are visible. ~~and~~

iii) In ants ~~are~~, bees and wasps, the 1st abdominal segment is fused with the metathorax, called propodeum. often the 2nd segment forms a narrow petiole. The rest of the abdomen is called gaster.

Abdominal appendages : ⇒

i) pregenital abdominal appendages in wingless insects :⇒

(a) Styli : various no. of paired styli are found on the ventral side of the abdomen of silverfish They help in locomotion.

(b) collophore or glue peg : It is located on the ventral side of 1st abdominal segment of springtail. It is cylindrical and protruded out by the hydrostatic pressure of haemolymph. It might serve as an organ of adhesion. It aids in water absorption from substratum and also in respiration.

(c) Retinaculum or tentaculum :⇒ (catch)

It is present on the ventral side of the 3rd abdominal segment. It is useful to hold the springing organ when not in use.

(d) Furcula or Furca :⇒

This is a 'y' shaped organ. It is present on the 4th abdominal segment. When it is released from the catch, it exerts a force against the substratum and the insect is propelled in the air.

ii) Abdominal appendages in immature insects :⇒

(a) Tracheal gills :⇒

Gills are lateral outgrowths of body wall which are supplied with tracheae to obtain O_2 from water in aquatic immature stages of hemimetabolous insects (Naiads). 7 pair of filamentous gill are present in the first 7 abdominal segments of naiads of mayfly and called as lateral gill. 3 or 2 leaf like gills (lamellate) are found at the end of abdomen of naiad of Damselfly and are called as caudal gill. In Dragonfly, the gills are retained within the abdomen in a pouch like rectum and are called as rectal gills.

(b) Anal papillae :⇒

A group of 4 papillae surrounds the anus in mosquito larvae. These papillae are concerned with salt regulation.

(c) Dolichasters :⇒

These structures are found on the abdomen of antlion grubs. ~~Each~~ dolichaster is a segmental

(d) Prolegs :⇒ These are present in the larvae of moth, butterfly and sawfly. 2 to 5 pair are normally present. They are unsegmented, thick and fleshy and help in crawling and clinging to surface.

iii) abdominal appendages in winged adults :- ④

ⓐ cornicles :- Aphids have a pair of short tubes known as cornicles or siphoncuti. They permit the escape of waxy fluid which serves for protection against predators.

ⓑ caudal breathing tube :-
It consist of two grooved filaments closely applied to each other forming a hollow tube at the apex of abdomen. eg water scorpion.

ⓒ cerci :- They are the most conspicuous appendages associated normally with 11th abdominal segment. They are sensory in function. ~~They~~ They exhibit wide diversity and form —
- Long and many segmented → e.g. Mayfly
- Long and unsegmented → e.g. cricket
- Short and segmented → e.g. cockroach
- Short and unsegmented → e.g. Grasshopper
- Sclerotised and forceps like : Earwig.

cerci are useful in defense, prey capture, unfolding wings and courtship.

ⓓ pygostyles :- A pair of unsegmented cerci like structures are found in the last abdominal segment of scolid wasp.

ⓔ Anal styli :- A pair of short unsegmented structures are found at the end of the abdomen of male cockroach. They are used to hold the female during copulation.

ⓕ ovipositor :- The egg laying organ found in female insect is called ovipositor. It is suited to lay eggs.

ⓖ pseudo ovipositor :- An appendicular ovipositor is lacking in fruit flies and house flies.
- In fruit flies, the elongated abdomen terminates into a sharp point with which the flies pierces the rind of fruit before depositing the eggs.

(5) In house fly the terminal abdominal segments are telescopic aid in oviposition.

(w) Male genitalia :=> External sexual organs of male insects are confined to 9th abdominal segment. In Damselfly, the functional copulatory organ is present on the re 2nd abdominal segment.

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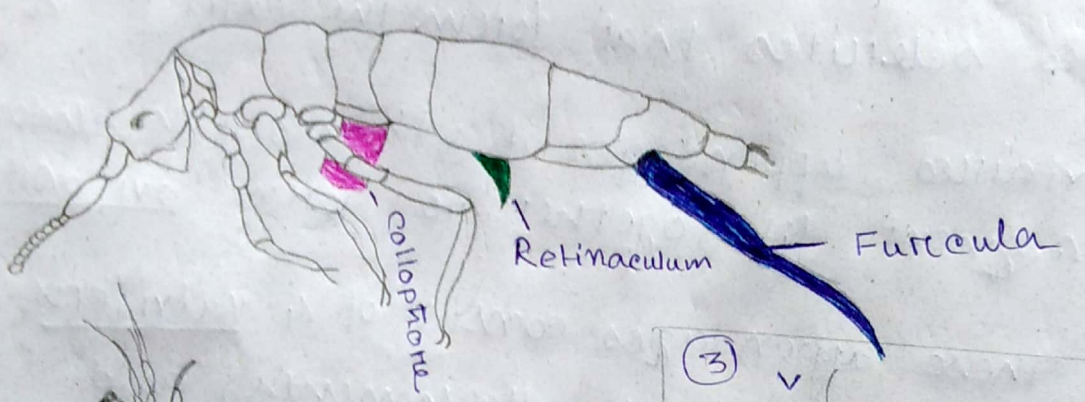

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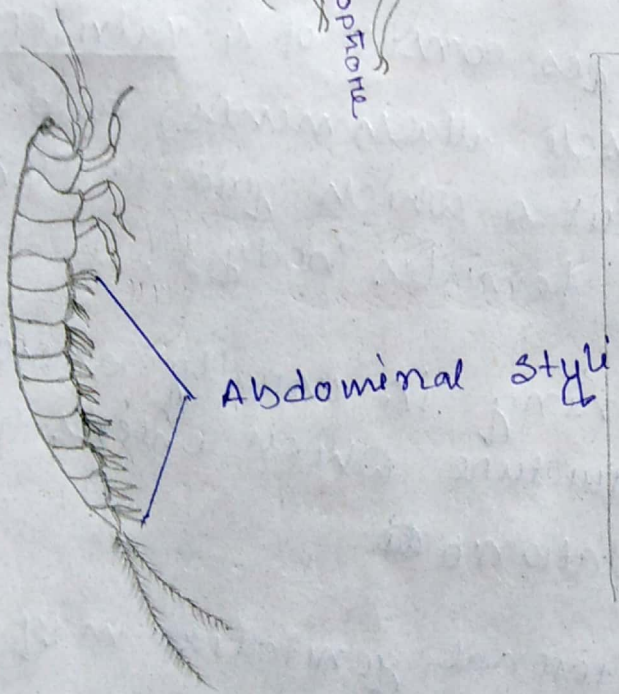

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