**Insects External Anatomy**

**Lec. 2**

Insect Morphology

MORPHOLOGY: IS THE STUDY OF FORM AND FUNCTION.

Insects are arthropods: Arthropoda: "jointed feet"

**General characteristics of arthropods:**

Exoskeleton

Bilateral Symmetry

Segmented bodies

Paired segmented appendages

Ventral nerve cord

Dorsal heart and open circulatory system

**General characteristics of insects:**

The body is comprised of 3 distinct body regions -- head, thorax, and abdomen

The thorax of adults bears 3 pairs of legs and 2 pairs of wings if present.

The "breathing" system is comprised of air tubes

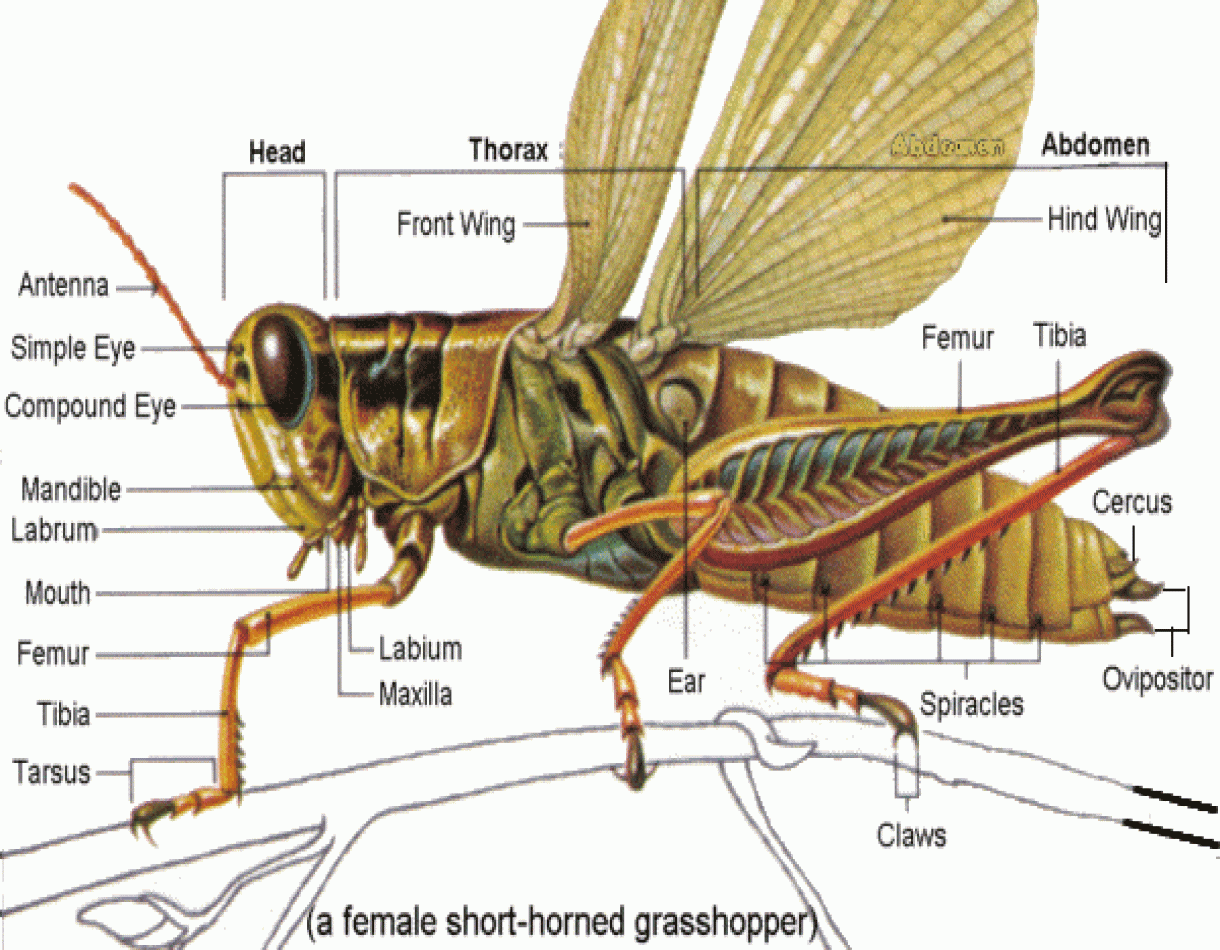
The exoskeleton is comprised of( 3) types of sclerites( hardened plates)

Tergites: Dorsal plates

Sternites: Ventral plates

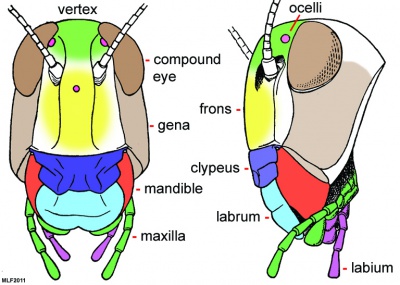
Pleuron: Lateral area, often membranous

The insect head bears: mouthparts, eyes, and antennae.



Head

Generally a head has four functions:

 1. For food ingestion

2. For sensory perception

3.To coordinate body activities

4.To protect coordination centers

Mouthparts

Labrum (1) (Upper lip) The **labrum** partially or completely obscures the **mandibles** and helps hold food in a position when the insect feeds.

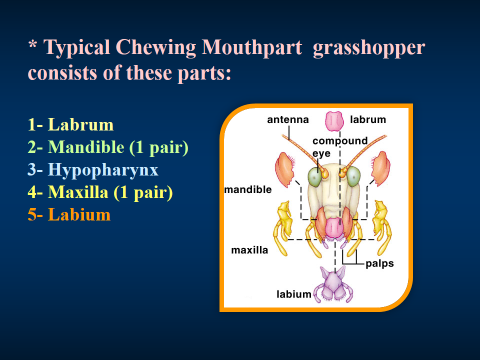
Mandibles (2) (upper jaws) A pair of jaws for crushing or grinding the food.

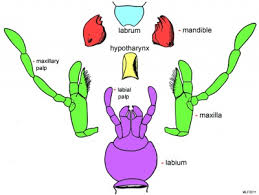
Maxillae (2) (More jaws)  Sensory in function, taste.

Labium (1) (Lower lip) Typically, together with the maxillae, the labium assists manipulation of food during mastication.

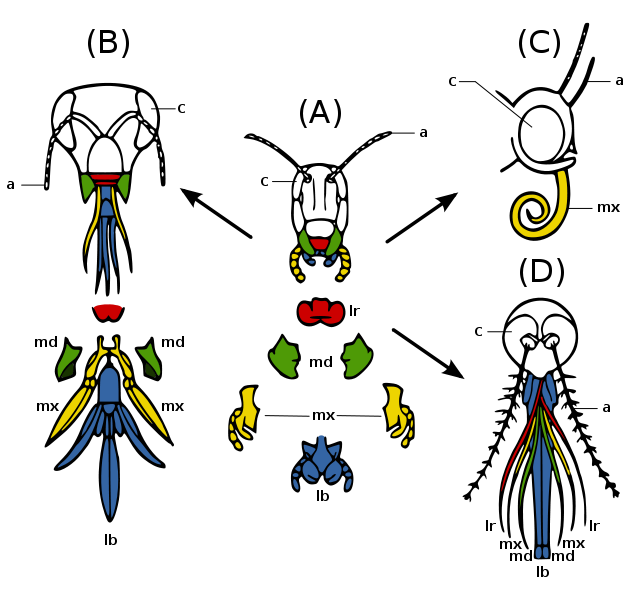
Hypopharynx (1) (A tongue-like process that helps mix food and saliva)

Labrum-epipharynx (1) (Fleshy inner surface of labrum - sensory)



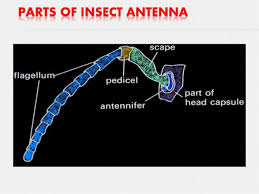


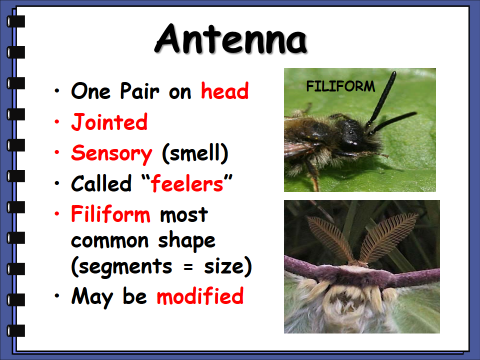
The mouthparts of Cockroaches

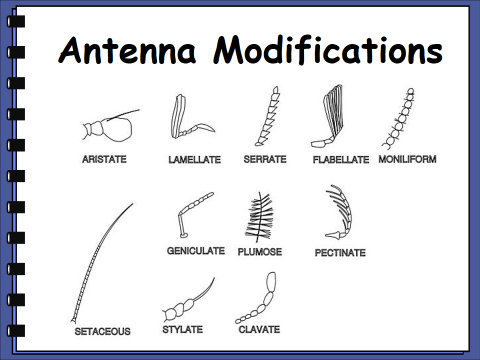


**Modifications of mouthparts**

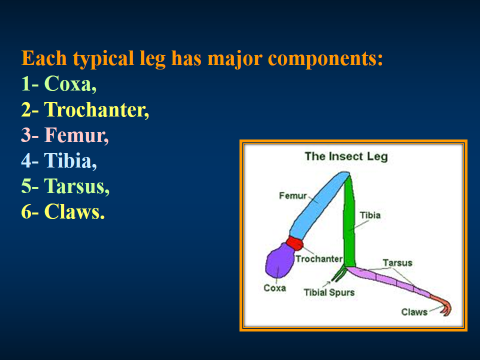
**The antennae**

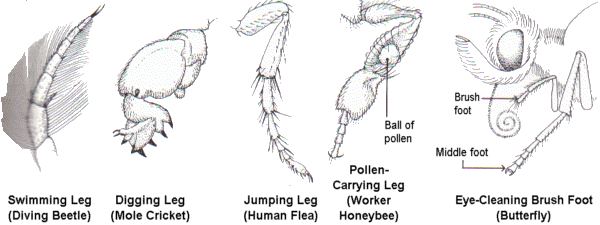






**The legs**

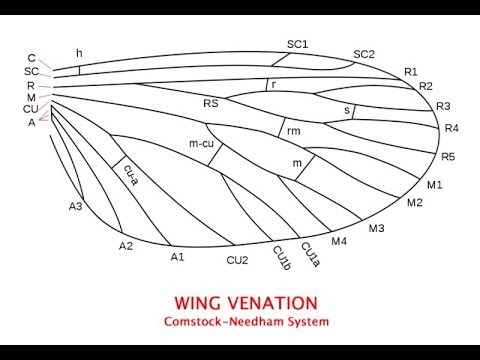




**The modifications of insect legs**

**The wings**





Abdomen

