



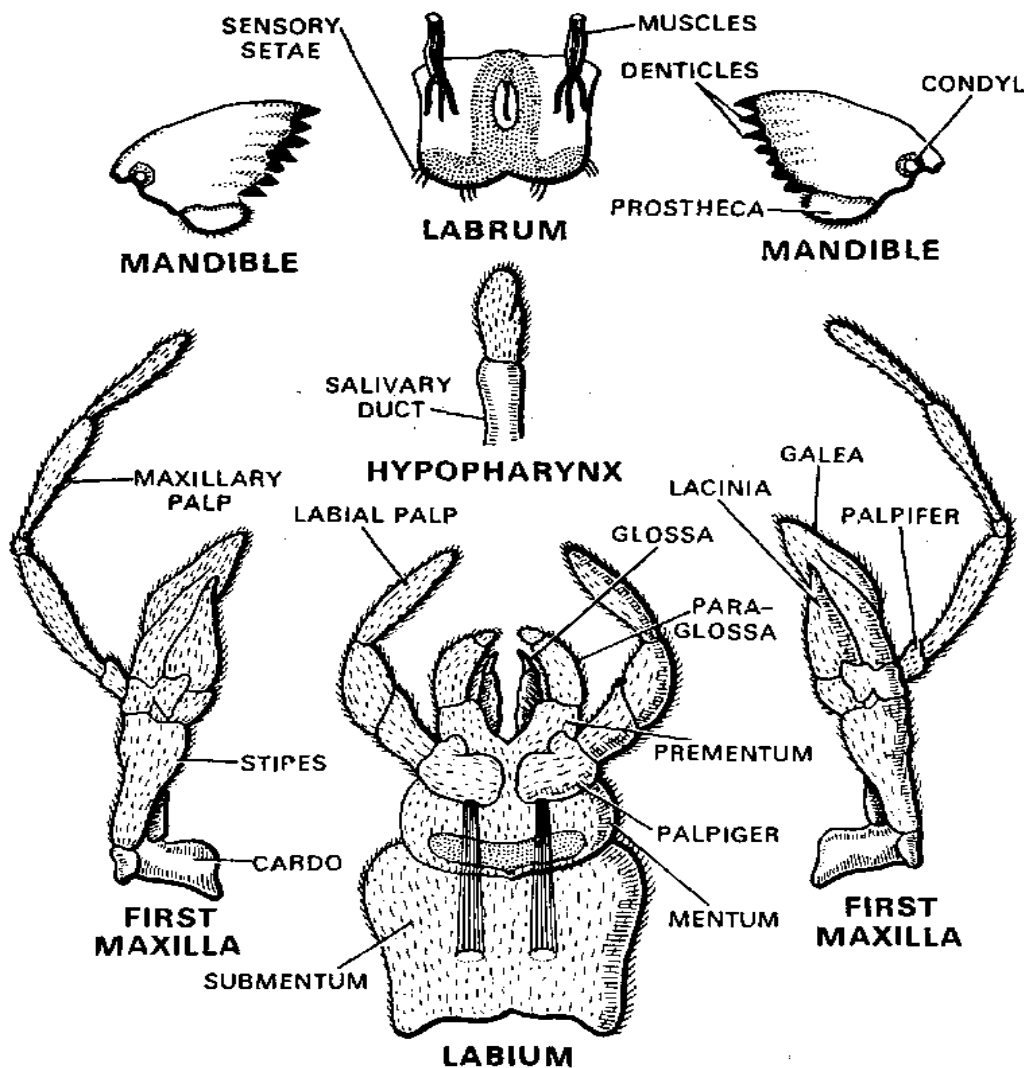
FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

ENT-121: Fundamentals of Entomology

Lecture 11: Insect Mouthparts:

1. Biting and chewing type: e.g. Cockroach & grasshopper. It is the primitive type of mouth part and consists of the following parts.

Labrum: (Upper lip) It is flap like, bilobed and attached to the clypeus by an articular membrane.



Labrum-epipharynx: Inner surface of the labrum is referred to as epipharynx.

Mandibles: There is a pair of mandibles. They are the first pair of jaws. They are also called as primary jaws or true jaws.

Maxillae: They are paired and more complicated than mandibles. They are called secondary jaws or accessory jaws. Maxillae has total five parts namely **Cardo, Stripes, Galea, Lacinia** and **maxillary palps**.

Hypopharynx: It is a tongue like organ.

Labium /lower lip: It is a composite structure formed by the fusion of two primitive segmented appendages. It bounds the mouth cavity from below or behind. It forms the base of the preoral cavity.

2. Piercing and sucking (Bugs): Labium projects downwards from the anterior part of the head like a beak. Beak is four segmented and grooved throughout its entire length. Labium is neither involved in piercing nor sucking. It functions as a protective covering for the four stylets (fascicle) found within the groove. Both mandibles and maxillae are modified into long slender sclerotized hair like structure called stylets.

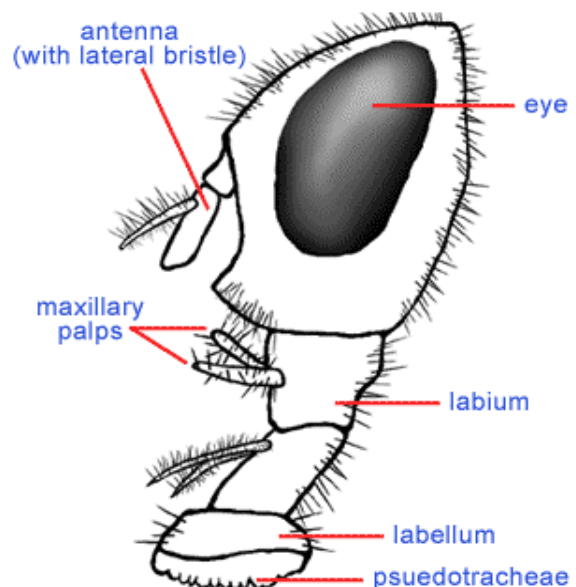
3. Piercing and sucking (Mosquitoes): Mouthparts of female mosquito consists of an elongate labium which is grooved forming a gutter which encloses six stylets. The stylets are composed of labrum - epipharynx (enclosing the food canal), the Hypopharynx (containing the salivary canal), two maxillae and two mandibles. Both the ends of maxillary stylets and mandibular stylets are saw like and suited piercing flesh.

4. Chewing and lapping type: e.g. honey bee. Labrum and mandibles are as in biting and chewing type of mouth parts. But mandibles are blunt and not toothed. They are useful to crush and shape wax for comb building; ingest pollen grains and other manipulative functions.

5. Rasping and sucking: e.g. Thrips. Mouth cone consists of labrum, labium and maxillae. There are three stylets derived from two maxillae and left mandible. Right mandible is absent.

6. Mandibulosuctorial type: e.g. grub of antlion.

7. Sponging type: e.g. House fly. The proboscis is fleshy, elbowed, and retractile and projects downwards from head. The proboscis can be differentiated into basal rostrum and distal haustellum. The proboscis consists of labium which is grooved on its anterior surface. Within this groove lie the labrum-epipharynx (enclosing the food canal) and slender Hypopharynx



(containing the salivary canal). Mandibles are absent.

8. Siphoning type: e.g., Moths and butterflies. Mouth parts consist of elongate sucking tube or proboscis. It is formed by two greatly elongated galeae of maxillae which are zippered together by interlocking spines and hooks. Galeae are grooved on their inner surface and when they are fitting together closely they form a suctorial food canal through which the nectar is sucked up. The proboscis is coiled up like watch spring and kept beneath the head when it is not in use. By pumping of blood into galeae, the proboscis is extended. The other mouth parts are reduced or absent except the labial palpi and smaller maxillary palpi.