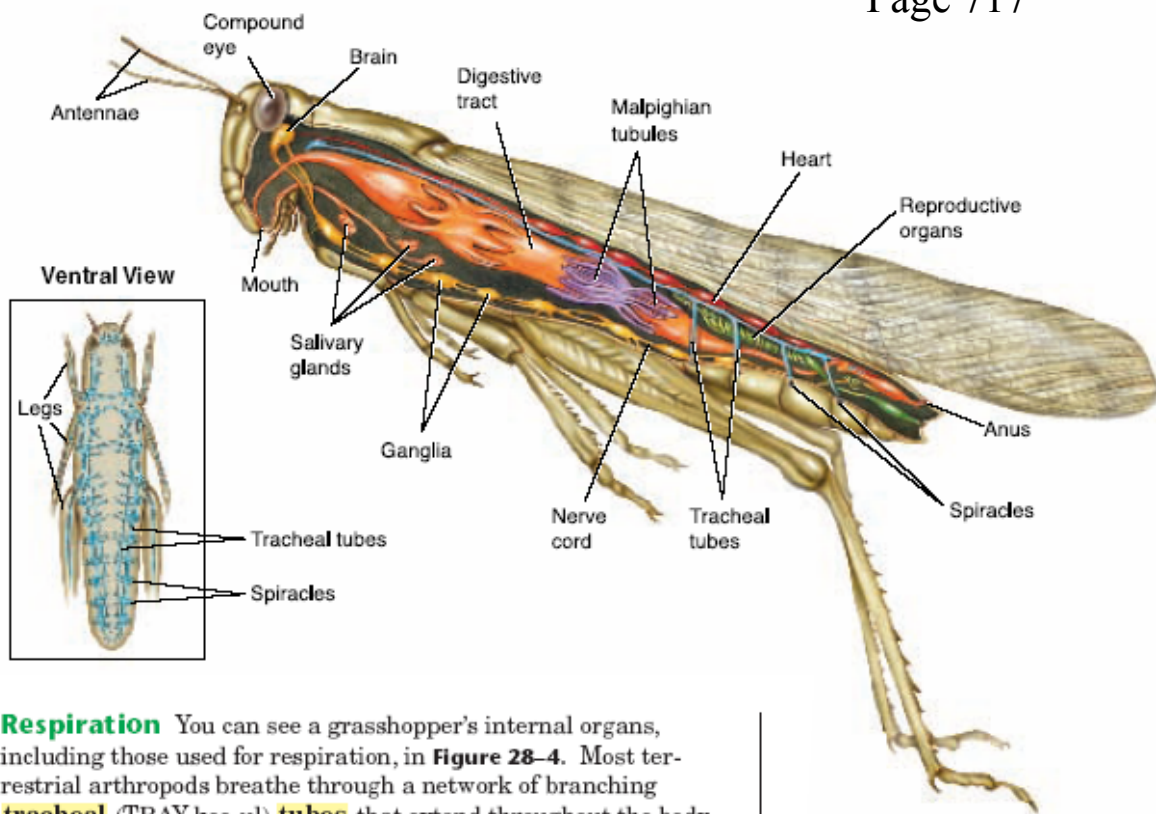


The grasshopper has organ systems typical of most arthropods.

Figure 28-4
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Respiration You can see a grasshopper's internal organs, including those used for respiration, in **Figure 28-4**. Most terrestrial arthropods breathe through a network of branching **tracheal** (TRAY-kee-ul) **tubes** that extend throughout the body.

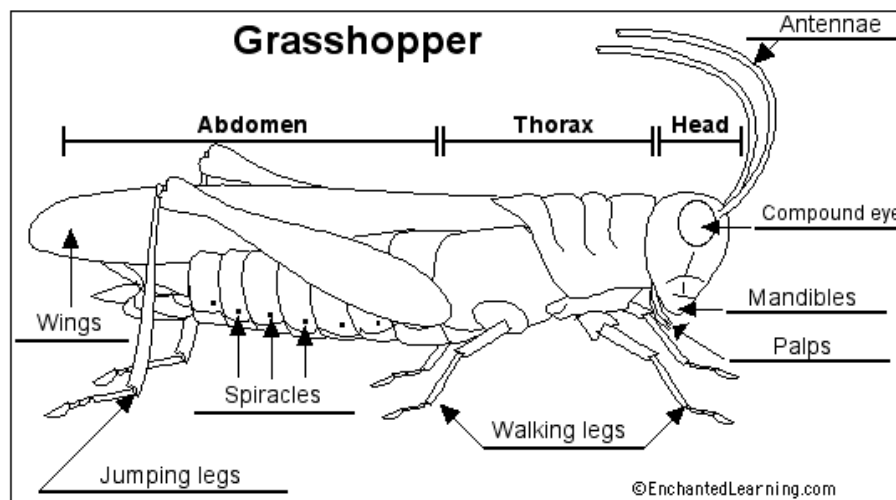
Grasshopper Dissection

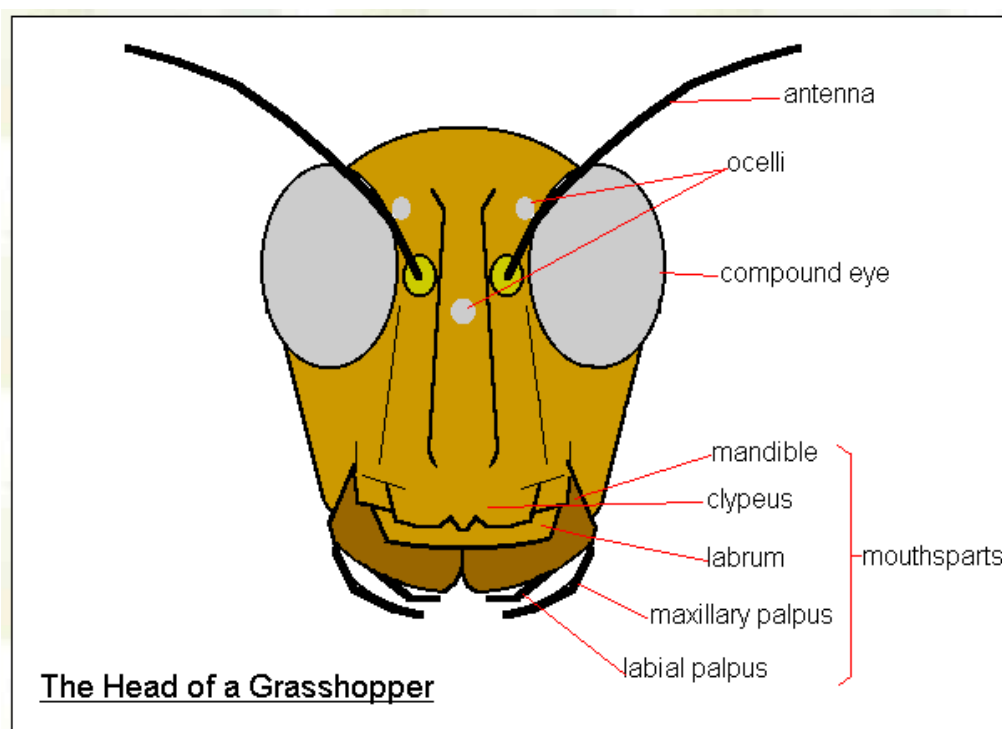
Diagrams



abdomen - the segmented tail area of a grasshopper, which contains the heart, reproductive organs, and most of the digestive system
antennae - like all insects, grasshoppers have 2 segmented antennae that sense touch and odors
compound eye - grasshoppers have 2 faceted eyes made up of many hexagonal lenses
head - the head is at the front end of the grasshopper's body and is the location of the brain, the two compound eyes, the mouth parts, and the points of attachment of its two antennae.
jumping legs - the long, hindmost pair of the grasshopper's six legs
mandibles - the jaws, located near the tip of the head, by the palps; the jaws crush the food

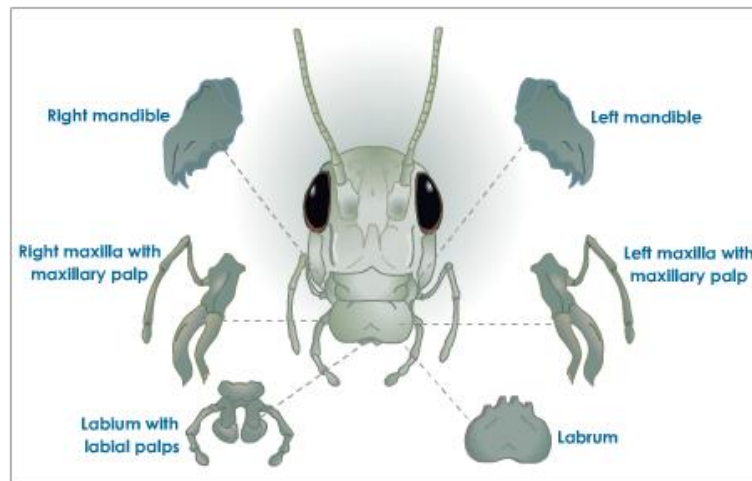
palps - long, segmented mouth parts (under the jaws) that grasp the food
spiracles - a series of holes located along both sides of the abdomen; they are used for breathing
thorax - the middle area of the grasshopper's body - where the legs and wings are attached
walking legs - the four, short front legs that are used for walking
wings - grasshoppers have two long wings, used for flying.





To understand the position of the mouth parts, observe the external features of a grasshopper in this diagram.

The body of the grasshopper is segmented into three portions head, thorax and the abdomen. The mouth parts are attached to the ventral side (underside) of the head portion and surrounds the mouth or the oral cavity which faces down.



Grasshopper - Mouthparts

The different mouthparts are:

Labrum or the upper lip

It is a broad, roughly rectangular shaped structure.

Lingua or the hypopharynx

A membranous tongue-like structure found attached beneath the labrum.

Mandibles

A pair of hard, horny, heavy, large, with jagged inner edges and dark coloured triangular structures found one on either side. The two mandibles move in horizontal motion and crush food between them.

Maxillae

A pair of structures lying outside and behind the mandibles. Each of them consist of 5-segmented sensory maxillary palp in addition to other parts. The maxillae are used to manipulate the food before it enters the mouth.

Labium

Forms the broad median lower lip consisting of several parts in addition to a pair of 3-segmented labial palps on either side.

The maxillary and labial palps have sense organs which help them to chose a suitable vegetation.

The mandibles and the maxillae grind the food by moving it laterally.

The labrum and labium help to hold the food between the mandibles and the maxillae.

Groups of Arthropods

Section 28-2

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Handout - Section 28-2

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