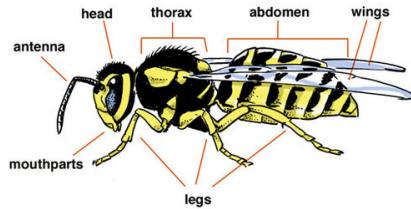


## Abdomen



the body region posterior to the thorax

## Adult stage



stage when the insect has all features and organs normally associated with its species

## Antennae



provides touch, taste and smell sensations to the nervous system

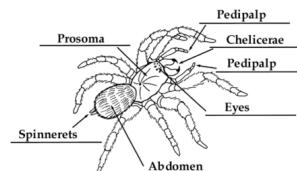
## Arachnida



class Arachnida - contains spiders

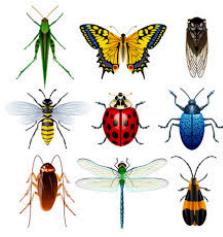
## Arachnida - Five characteristics

### Spider Parts: Answers



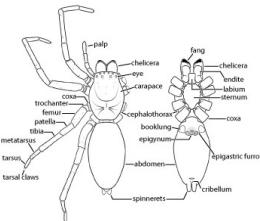
1. four pairs of walking legs
2. a cephalothorax instead of separate head and thorax
3. usually have four pairs of simple eyes
4. no antennae
5. respiration done through organs known as "book lungs"

## Arthropoda



joint-footed

## Book lungs



equivalent to gills on crayfish but on spiders

## Carapace

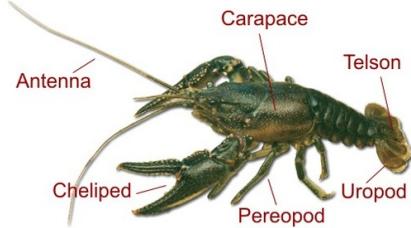
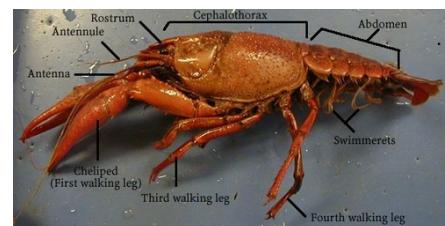


plate covering cephalothorax (crayfish)

## Cephalothorax



a body region composed of the head and thorax fused together

## Chilopoda



Class Chilopoda - centipedes

## Chitin



▲ Chitin forms the exoskeleton of arthropods.

a chemical that is tough and flexible

## Chrysalis



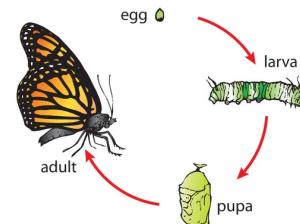
casing (from pupa stage) a butterfly makes

## Coleoptera



Order Coleoptera - beetles

## Complete Metamorphosis



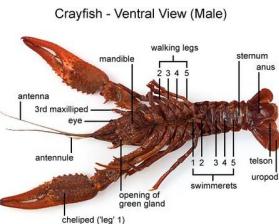
insect development consisting of four stages:  
egg, larva, pupa and adult

## Compound eye



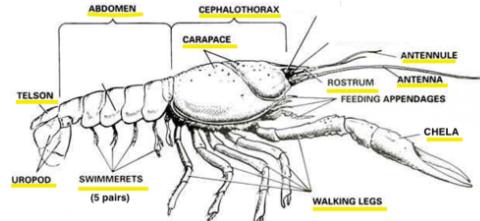
an eye made of many lenses, each with a very limited scope

## Crayfish - Antennae



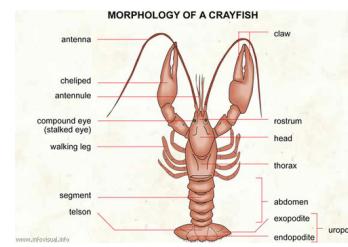
These longer appendages are much more sensitive than the antennules, providing the crayfish with strong senses on taste and touch.

## Crayfish - Antennules



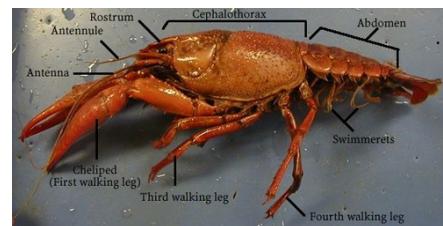
These small antennae aid the creature in balance and provide taste and touch sensations.

## Crayfish - Chelipeds



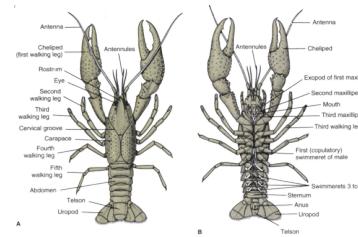
(usually called "claws") used for defense as well as to grab onto prey

## Crayfish - Swimmerets



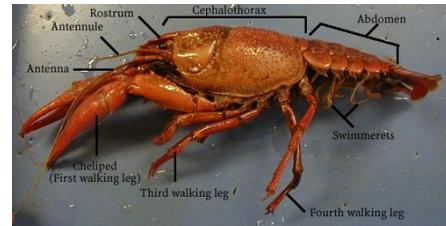
These aid in swimming as well as reproduction. In male crayfish, the first and second swimmerets transfer sperm to the female during mating. In females, the swimmerets carry both the egg and the developing offspring.

## Crayfish - Uropods and Telson



These appendages form the flipper-shaped tail that the crayfish uses for swimming.

## Crayfish - Walking legs



These appendages are used for locomotion when the crayfish is on land or moving on the bottom of the lake or river in which it lives.



## Crustacea

Class Crustacea - contains largest arthropods - live in fresh water or marine environments

## Digestive glands



secrete enzymes

## Diplopoda



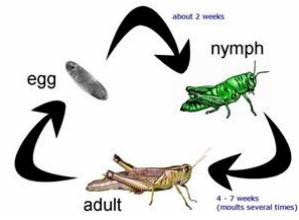
Class Diplopoda - millipedes

## Diptera



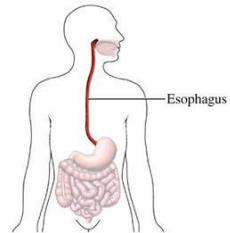
Order Diptera - flies, gnats and mosquitoes

## Egg stage



the female lays her eggs and they are fertilized by the stored sperm

## Esophagus



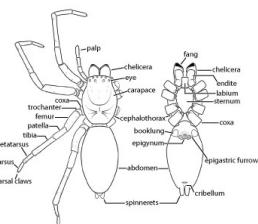
goes through to get to stomach

## Exoskeleton



a body covering typically made of chitin, that provides support and protection

## Fangs

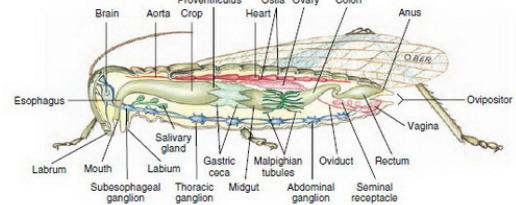


sink into prey and inject the poison

## Ganglia

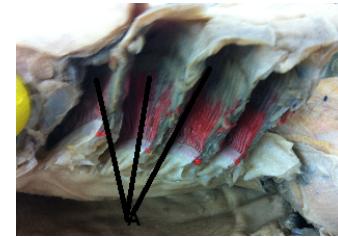
process signals running down nerve cord

## Gastric ceca



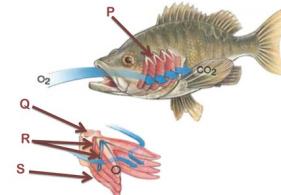
keeps digestive enzymes for breaking down food

## Gill chambers



allows water from the surroundings to flow inside the gills

## Gills



organs in most underwater animals - for getting oxygen

## Gonad

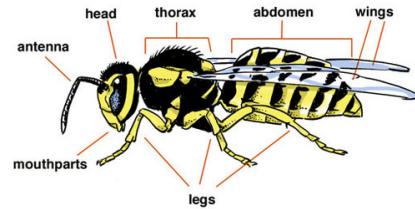
a general term for the organ that produces gametes

## Green gland



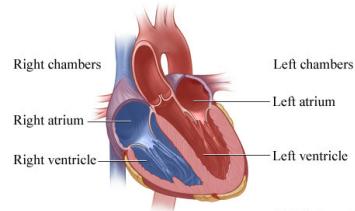
cleans blood of impurities

## Head



the body region before the thorax

## Heart



pumps blood throughout body

## Horny wings



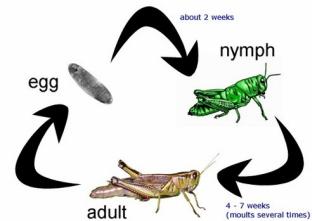
cover and protect membranous wings but are tougher than leather-like wings and typically cover almost the entire insect - example: beetles

## Hymenoptera



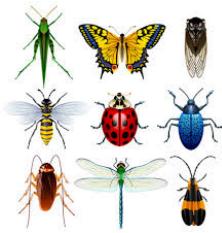
Order Hymenoptera - ants, bees and wasps

## Incomplete Metamorphosis



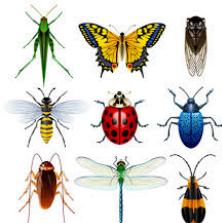
insect development consisting of three stages:  
egg, nymph and adult

## Insecta



Class Insecta - insects

## Insecta - Four characteristics



1. three pairs of walking (or jumping) legs
2. usually have wings at some stage of their life
3. one pair of antennae
4. three segments: head, thorax, and abdomen

## Intestine



particles go there if they are too large - they are exposed to digestive enzymes that digest what they can/cannot

## Larva stage



stage when insects hatch

## Leather-like wings



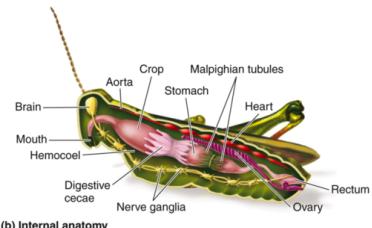
appear to be part of exoskeleton - typically laid over a second, membranous pair of wings to protect them - example: grasshopper

## Lepidoptera



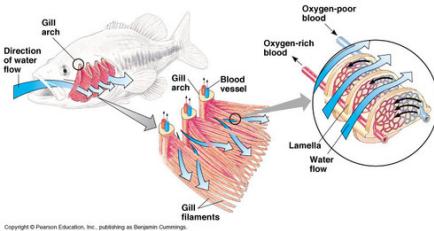
Order Lepidoptera - butterflies and moths

## Malpighian tubules



cleans blood in insects

## Maxilla(e)



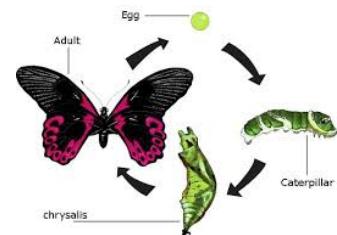
tiny appendages near the mouth - keeps water flowing through the gills

## Membranous wings



thin, transparent, detailed network of visible veins - example: fly

## Metamorphosis



process of an insect going through its stages of life

## Molt

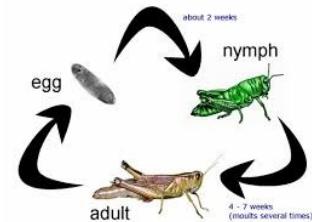


to shed an old outer covering so that it can be replaced with a new one

## Nerve cord

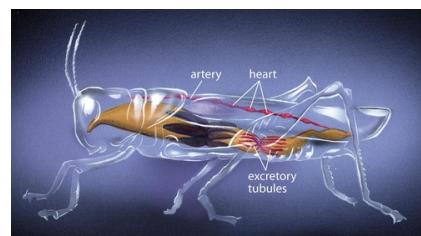
sends information throughout

## Nymph Stage



In this stage, the insect looks like an adult but the proportions are incorrect. It also lacks wings and reproductive organs.

## Open circulatory system



a circulatory system that allows the blood to flow out of the blood vessels and into various body cavities so that the cells are in direct contact with the blood

## Orb web



consists of concentric circles of sticky silk that are supported by "spokes" of nonsticky silk

## Orthoptera

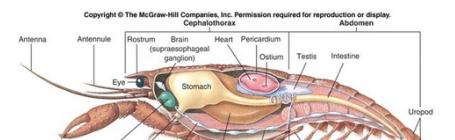


Order Orthoptera - grasshoppers and crickets

## Ovary

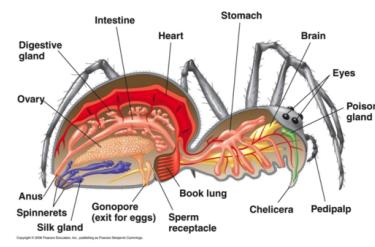
gonad in females

## Pericardial sinus



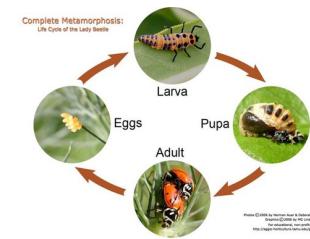
cavity where the heart rests

## Poison Glands



hold poison

## Pupa stage



stage when insects form a case around themselves

Scaled wings



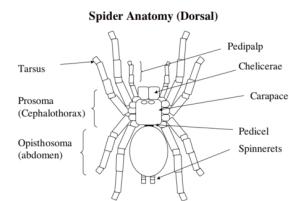
delicate scales that are easy to rub off -  
example: moths and butterflies

Sheet web



single, flat sheet of sticky silk

Silk glands



where the silk is produced

Simple eye



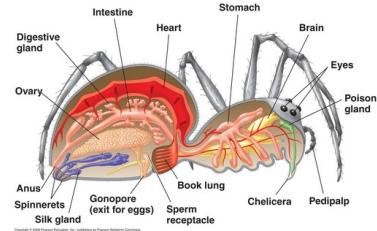
an eye with only one lens

Social insects



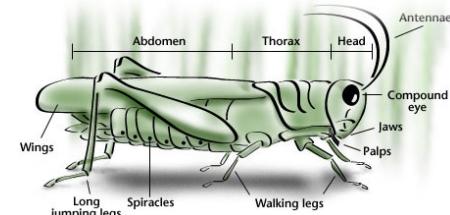
all species in Order Hymenoptera

## Spinnerets



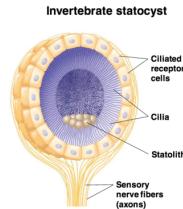
used to spin the silk

## Spiracle



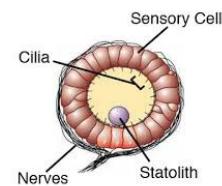
a slit in the abdomen of the spider that air enters in from

## Statocyst



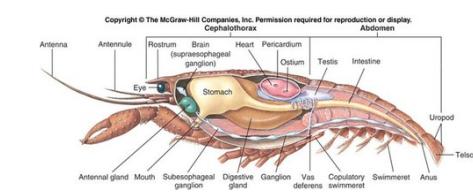
the organ of balance in a crustacean

## Statolith



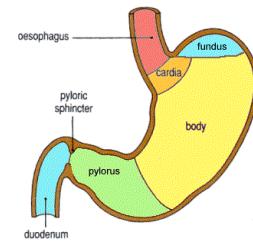
grain of sand inside each hair-lined container

## Sternal sinus



blood falls in and is collected by blood vessels that are open at one end

## Stomach



has two regions - 1 grinds food into small particles - 2 sorts particles

## Tangle web

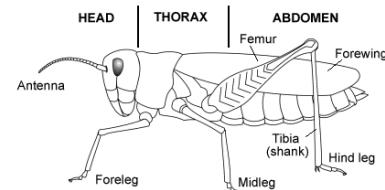


a tangle of webs with no real discernible pattern

## Testis

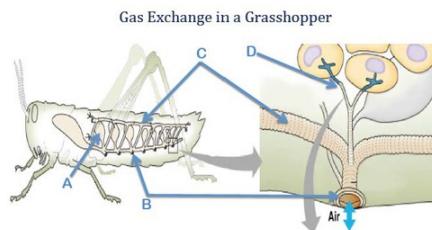
gonad in males

## Thorax



the body region between the head and the abdomen

## Tracheas



elaborate system of interconnecting tubes in insects

## Trap door spider



digs a shallow hole in the ground and then  
weaves a "trap door" out of silk