

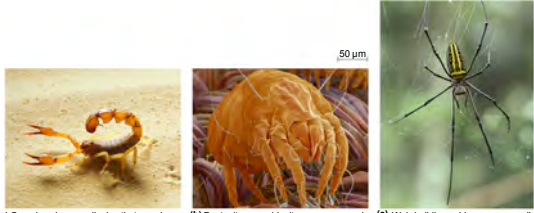
Arthropods

Principle Classes of Arthropods

- Crustacea
- Arachnida
- Myriopoda
- Insecta

Arachnids

– includes spiders, scorpions, ticks, and mites



(a) Scorpions have pedipalps that are pincers specialized for defense and the capture of food. The tip of the tail bears a poisonous stinger.

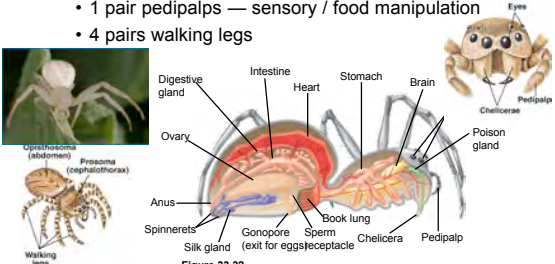
(b) Dust mites are ubiquitous scavengers in human dwellings but are harmless except to those people who are allergic to them (colorized SEM).

(c) Web-building spiders are generally most active during the daytime.

Figure 33.31a–c

Arachnids

- Two tagmata: cephalothorax & abdomen
 - six pairs of appendages:
 - 1 pair chelicerae w/ venom fangs or claws
 - 1 pair pedipalps — sensory / food manipulation
 - 4 pairs walking legs



Labels in diagram: Digestive gland, Intestine, Heart, Stomach, Brain, Eye, Chelicerae, Pedipalp, Poison gland, Ovary, Anus, Spinnerets, Silk gland, Gonopore (exit for eggs), Sperm receptacle, Book lung, Chelicera, Pedipalp, Walking legs, Cephalothorax (cephalothorax), Abdomen (abdomen).

Figure 33.32

Myriopoda

Centipedes & millipedes

- Two tagmata: head & trunk (= thorax + abdomen)
- Head w/ 4 segments & 4 pairs of appendages
- Trunk w/ many segments — 1 pair of legs/segment


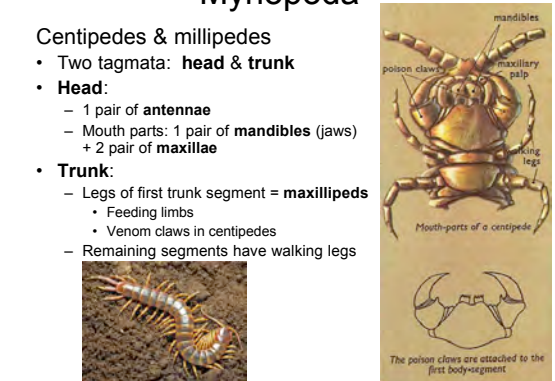


Figure 33.34 (centipede), Figure 33.33 (millipede)

Myriopoda

Centipedes & millipedes

- Two tagmata: **head & trunk**
- **Head:**
 - 1 pair of **antennae**
 - Mouth parts: 1 pair of **mandibles** (jaws) + 2 pair of **maxillae**
- **Trunk:**
 - Legs of first trunk segment = **maxillipeds**
 - Feeding limbs
 - Venom claws in centipedes
 - Remaining segments have walking legs



Labels in diagram: mandibles, maxillary palp, poison claws, walking legs, Mouth-parts of a centipede.

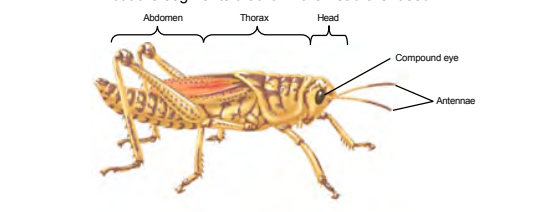
The poison claws are attached to the first body segment.

Insects

- **External anatomy**

The insect body has **three tagmata: head, thorax, and abdomen.**

- The segmentation of the thorax and abdomen are obvious, but the segments that form the head are fused.



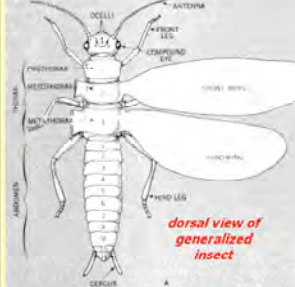
Labels in diagram: Abdomen, Thorax, Head, Compound eye, Antennae.

Figure 33.35

Arthropods

Insects

- External anatomy



Head: 6 segments
Thorax: 3 segments
Abdomen: 11 segments

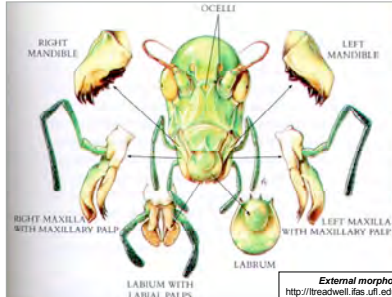
dorsal view of generalized insect

Insect Legs:
Basic plan: 5 segments
coxa, trochanter, femur, tibia, tarsal claw

External morphology of insects
<http://treadwell.fas.ufl.edu/insects/03external.htm>

Insects

- External anatomy — head


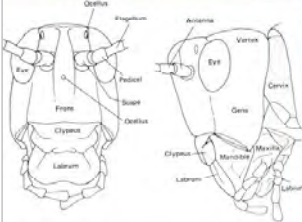


OCELLI
RIGHT MANDIBLE
LEFT MANDIBLE
RIGHT MAXILLA WITH MAXILLARY PALP
LEFT MAXILLA WITH MAXILLARY PALP
LABRUM
LABIUM WITH LABIAL PALPS

External morphology of insects
<http://treadwell.fas.ufl.edu/insects/03external.htm>


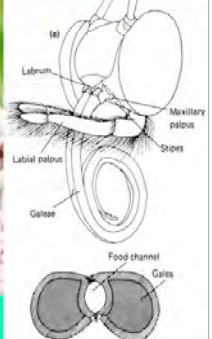
chewing mouthparts

Grasshopper (order Orthoptera, Acrididae): mouthparts directed downward and specialized for processing plant materials


© D. Sandved & M.G. Erolley ©198 Viking Penguin

Gulf fritillary butterfly (order Lepidoptera, Nymphalidae): coiled mouthparts, adapted for siphoning nectar

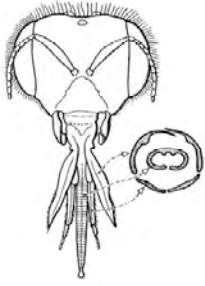



Siphoning mouthparts


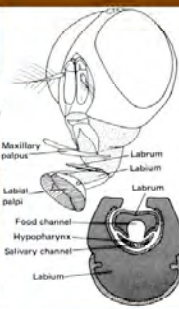
Bee (order Hymenoptera, Apidae): mouthparts adapted for lapping nectar



lapping mouthparts



sponging mouthparts

Arthropods

