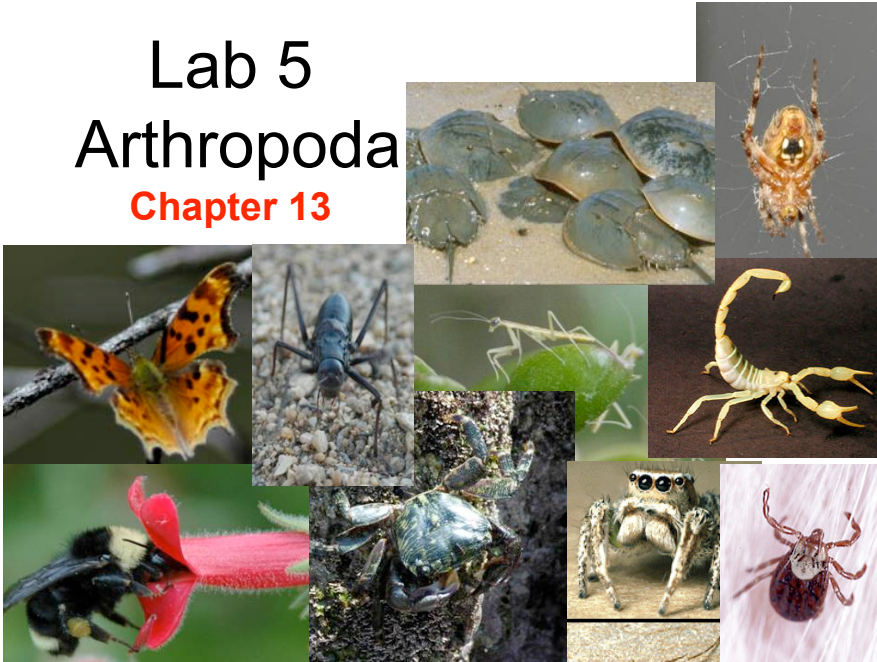


Lab 5 Arthropoda

Chapter 13



Exam Results

- Average = 31/60
- Adjusted Average = 33/60
- 51%
- 54%
- High score = 91.0

Last Semester

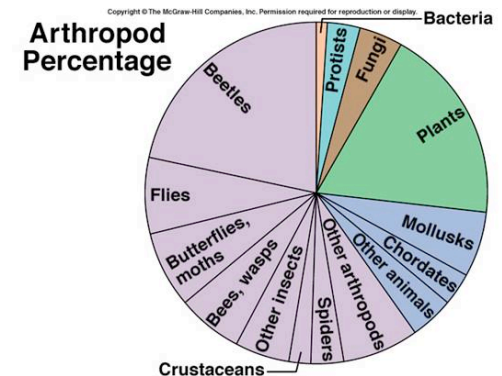
Exam 1 - 58%

Exam 2 - 74%

Exam 3 - 81%

Arthropods

- Exoskeletons with jointed appendages
- By far the most diverse group of *organisms* on the planet



Arthropod taxonomy

- **Subphylum Chelicerata**
 - Class Merostomata (horseshoe crabs)
 - Class Arachnida (scorpions, spiders, ticks)
- **Subphylum Crustacea**
- **Subphylum Hexapoda**
 - Class Insecta
- **Subphylum Myriapoda**
 - Class Diplopoda (millipedes)
 - Class Chilopoda (centipedes)

Note: this is DIFFERENT taxonomy the old lab manual uses and you should use this updated taxonomy.

Subphylum Chelicerata



Carapace

Horse shoe crab



Spider (Identify)

Chelicerae (fangs)

Pedipalps

Walking legs (4 pair)

Chelicerae

fang

Today

- We're going to dissect a **Crayfish** & **Grasshopper**

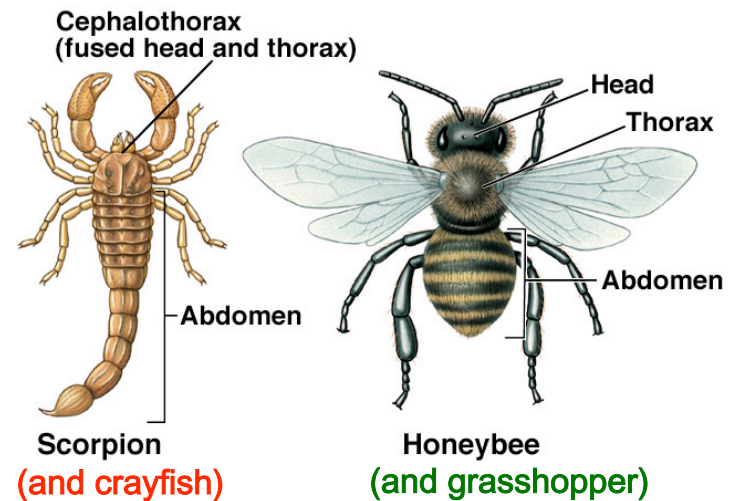


Live in freshwater



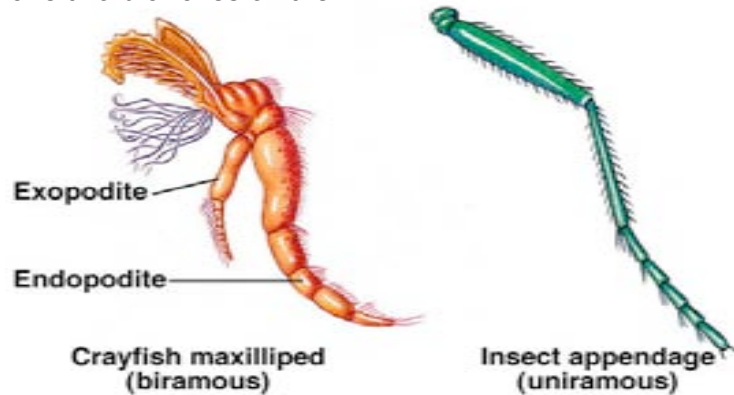
Terrestrial

Arthropod tagmata



Subphylum Crustacea - Crayfish

- Appendages are **biramous**
 - Have two branches on them



Crayfish paired appendages

- **Gill Bailer** – draws current of water over gills



- Food manipulation
- Next 5 are walking legs including chelae (claws)

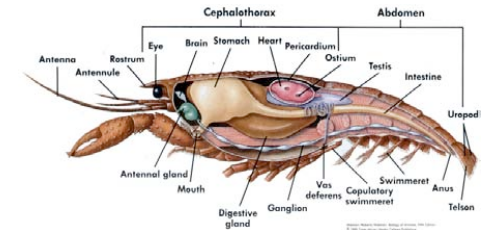
Crayfish

Turn to pg 217 in lab book

(going anterior to posterior, in order)

Identify the appendages

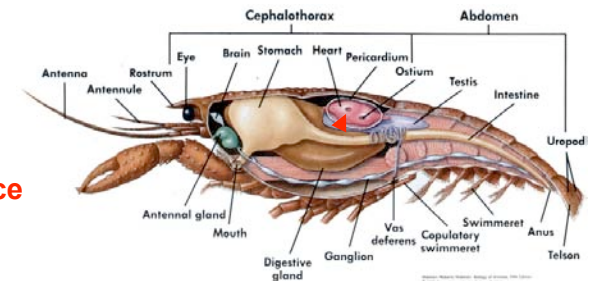
- **On the head**
 - Antennules
 - Antennae
 - Mandibles
 - 2 maxillae
 - 2nd has gill bailer
- **On the thorax**
 - 3 maxillipeds
 - 5 walking legs
 - Includes the chelae (claws)
- **On the abdomen**
 - Swimmerets
 - First pair enlarged in male
 - Uropods
 - Last pair of appendages
 - Surround the telson (last segment, with anus)



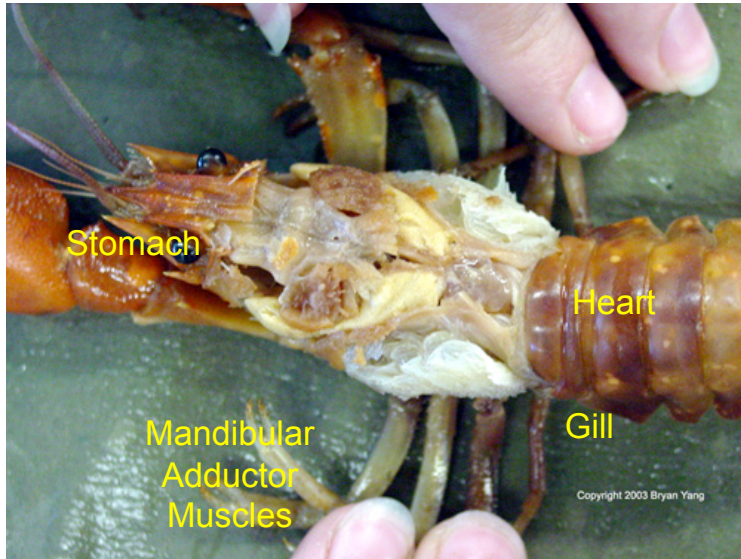
Crayfish dissection

Remove the Carapace

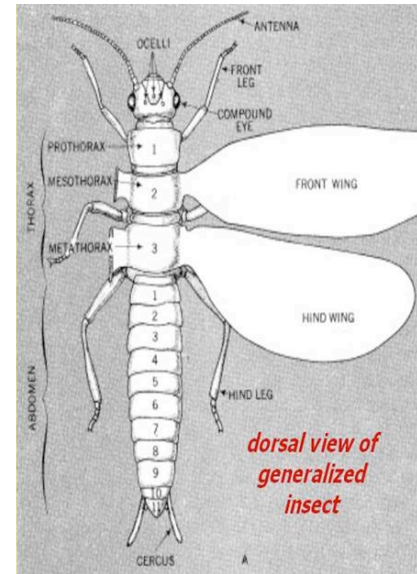
- Be gentle!
- **Identify Internal structures**
 - Heart w/ Ostia (immediately upon opening)
 - Gills
 - Mandibular muscles
 - Gonads (testes / ovaries) (under heart)
 - Digestive gland
 - Green gland (under stomach; not green)
 - Esophagus / Stomach / Intestine
 - Gastric mill inside stomach



The crayfish



Subphylum Hexapoda: Class Insecta



Head:

1 pair compound eyes, 3 ocelli, 1 pair of antennae (or not), and mouthparts

Thorax:

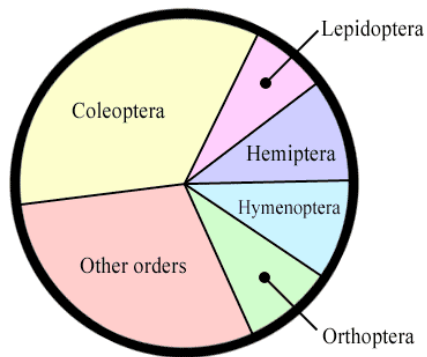
3 pairs of legs and wings (0, 1 or 2 pairs)

Abdomen

Old taxonomy, subphylum Uniramia grouped insects, centipedes, and millipedes together.

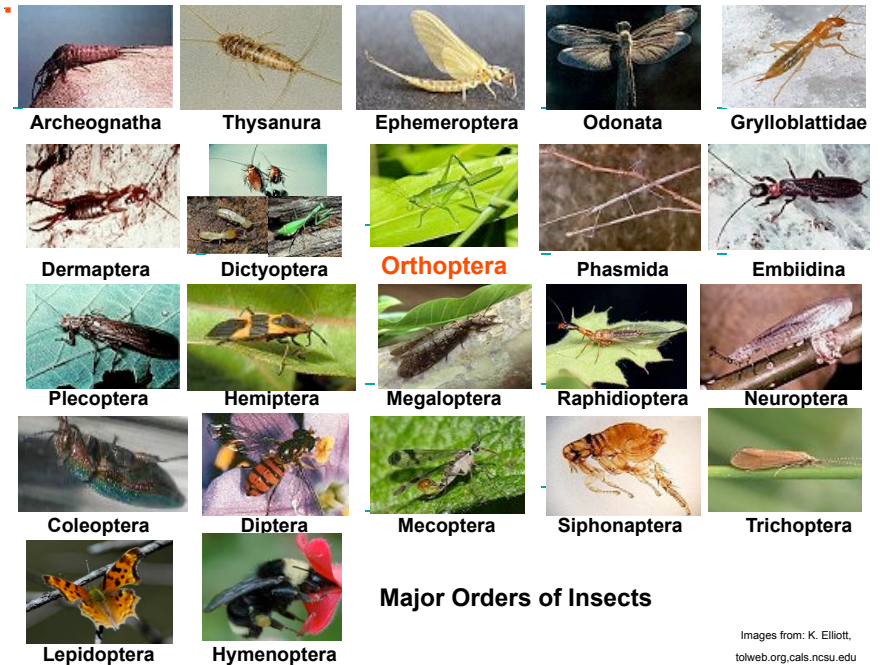


Subphylum Hexapoda: Class Insecta



An incredibly diverse class!

- major differences between the 29 Orders are their development, wings (0, 1, or 2 pairs and “texture”), and mouthparts

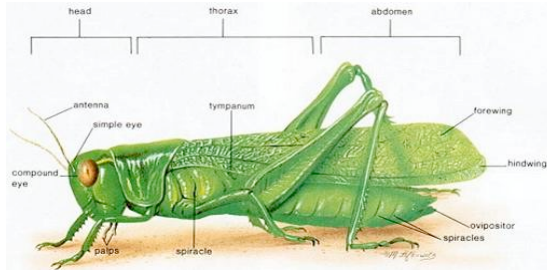


Grasshopper

- On the head
 - Antennae
 - Compound eye
 - Mandibles
- On the thorax
 - Legs (3 pairs)
 - Wings

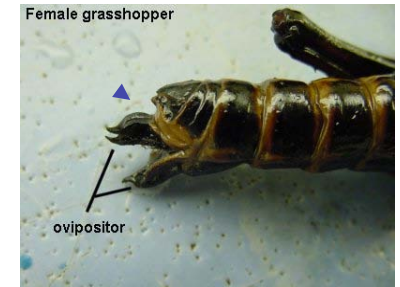
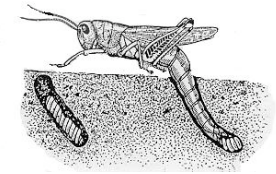
Identify external parts

- On the abdomen
 - Spiracles (hard to see)
 - Tympanic membrane
 - Ovipositor (female)



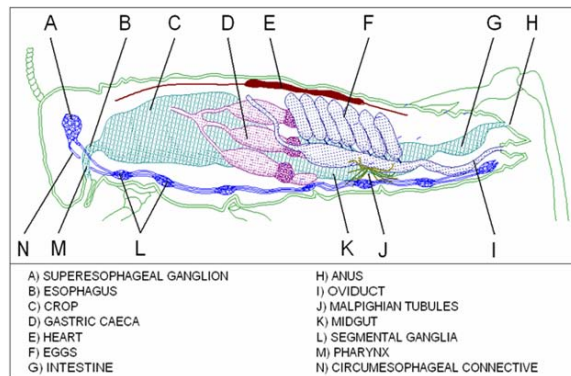
Grasshopper

- On the abdomen
 - Ovipositor (female)



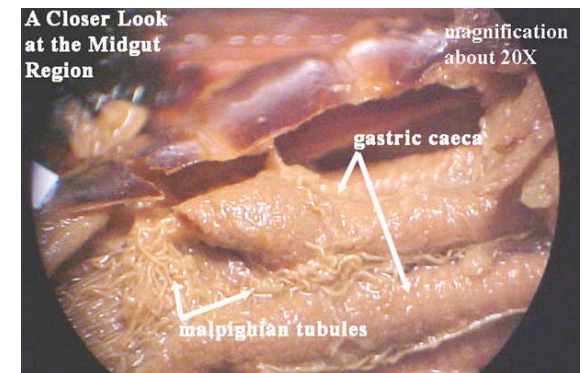
Grasshopper

- Be gentle!
- Identify Internal structures
 - Crop
 - Gastric caeca
 - Midgut (stomach)
 - Malpighian tubules
 - Gonads
 - Intestine
 - Rectum

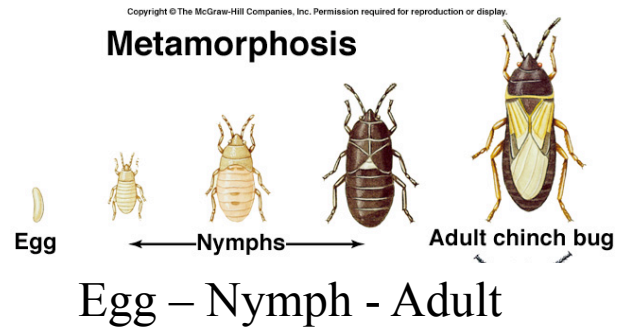


Grasshopper

- Be gentle!
- Identify Internal structures
 - Crop
 - Gastric caeca
 - Midgut (stomach)
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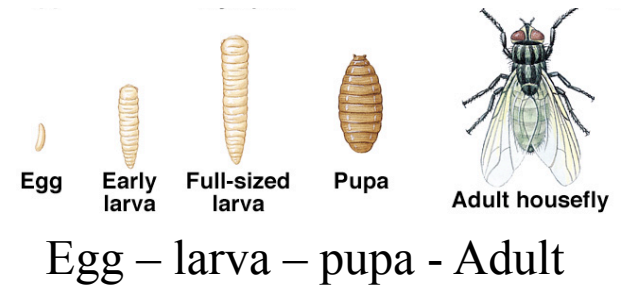
Metamorphosis styles



- **Incomplete or Gradual / Metamorphosis**

Example - **Grasshopper**

Metamorphosis styles



- **Complete Metamorphosis**

Example - Moth and Butterfly



Don't forget to look
at the side
benches.

There is more to see!