

# Invertebrate Zoology

## Lecture Notes - Animal Body Structure

Notes: This is an outline of my class notes - details and visuals will be given in class!  
Really. It won't be this boring!

Read: Chapter 9 in Hickman, Roberts & Larson.

### **I. Grades of metazoan organization**

metazoan - multicellular animals

- A. protoplasmic**
- B. cellular**
- C. cell-tissue**
- D. tissue-organ**
- E. organ-system**

### **II. Scaling**

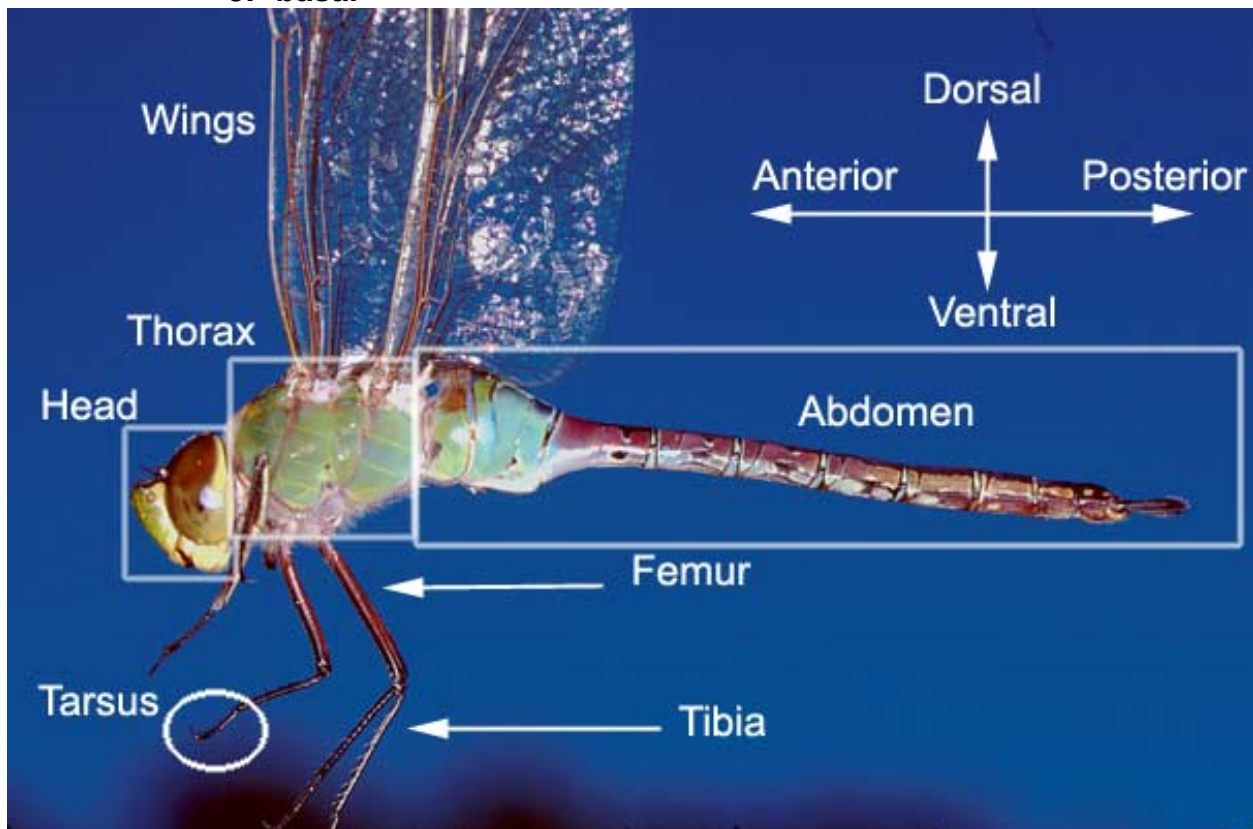
**A. body surface area increases more slowly than body volume**

- 1. surface area needed for exchange**
- 2. volume sets levels for work done, metabolites needed**
- 3. smaller organisms fit more niches**
- 4. larger organisms more efficient**
- 5. larger organisms less vulnerable to predation**

Learn tissue types on own (figures 9.4-9.7)

## Symmetry

- A. spherical: can be divided into equal halves by any plane passing through center
- B. radial: can be divided into equal halves by more than one plane cutting through longitudinal axis
- C. bilateral: only a sagittal plane can divide organism into equal halves
- D. directions:
  - 1. anterior/cranial
  - 2. posterior/caudal
  - 3. medial
  - 4. lateral
  - 5. dorsal
  - 6. ventral
  - 7. distal
  - 8. proximal
  - 9. basal



### **III. Segmentation**

- A. metameric - serially repeated segments**
- B. cephalized - development of head as sensory center**
- C. segments may be specialized**

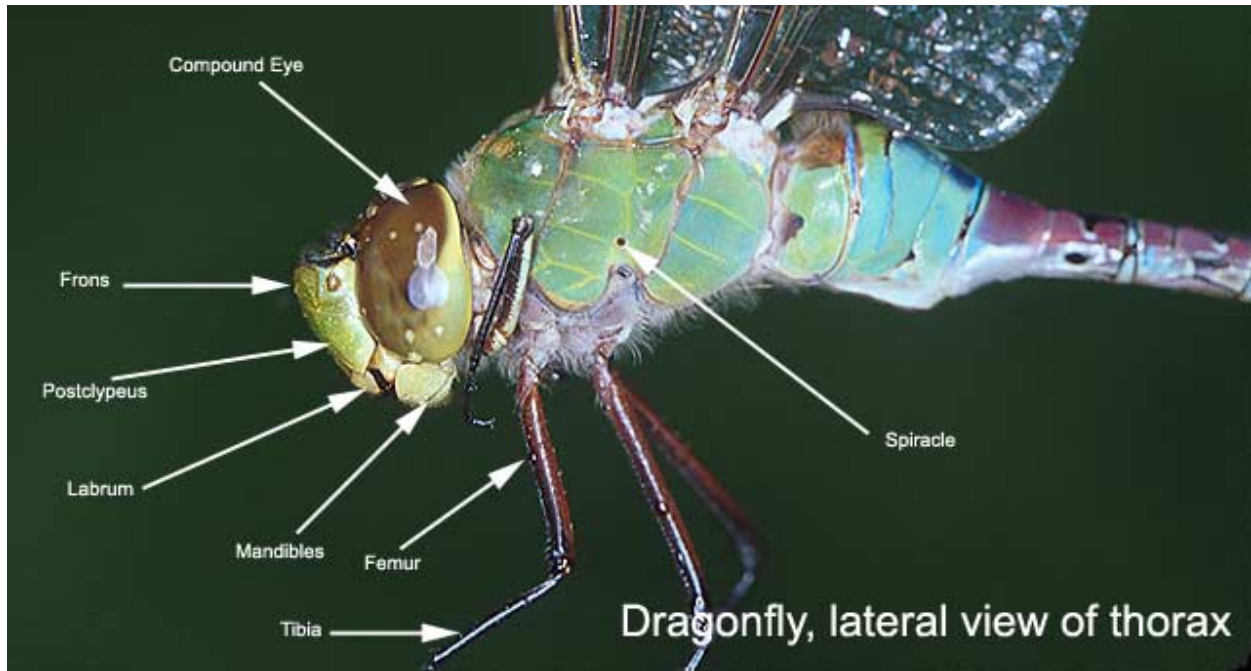
#### **The insect body:**

##### **A. head**

- 1. compound eyes**
- 2. ocelli**
- 3. antennae**
- 4. mouthparts**
  - a. labrum
  - b. maxillae
  - c. mandibles
  - d. labium
  - e. hypopharynx

##### **B. 3 thoracic segments**

- 1. sclerites**
  - a. tergites - dorsal
    - 1. notum**
  - b. sternites - ventral
    - 1. sternum**
  - c. pleurites - lateral



### 1. leg

- a. trochanter
- b. femur
- c. tibia
- d. tarsus
  - 1. 1-5 segments, starting from tibia
  - 2. claw
- e. prolegs

### 2. prothorax

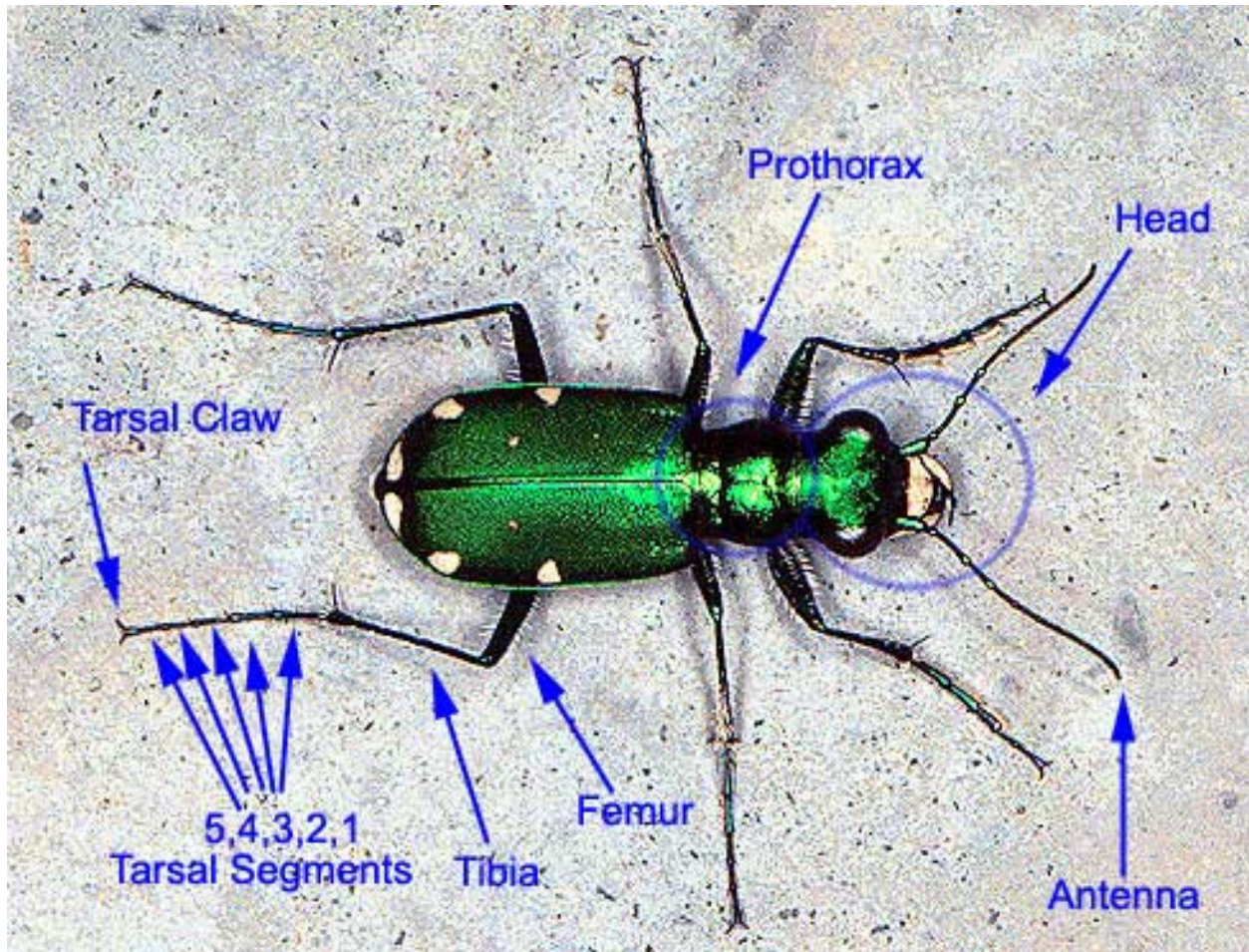
- a. legs only

### 3. mesothorax

- a. legs and wings except in Strepsiptera

### 4. metathorax

- a. legs and wings except in Diptera, some Homoptera, some Ephemeroptera



**C. 10 abdominal segments**

- 1. numbered from thorax 1..11**
- 2. may bear gills or spines**
- 3. cerci or tails**

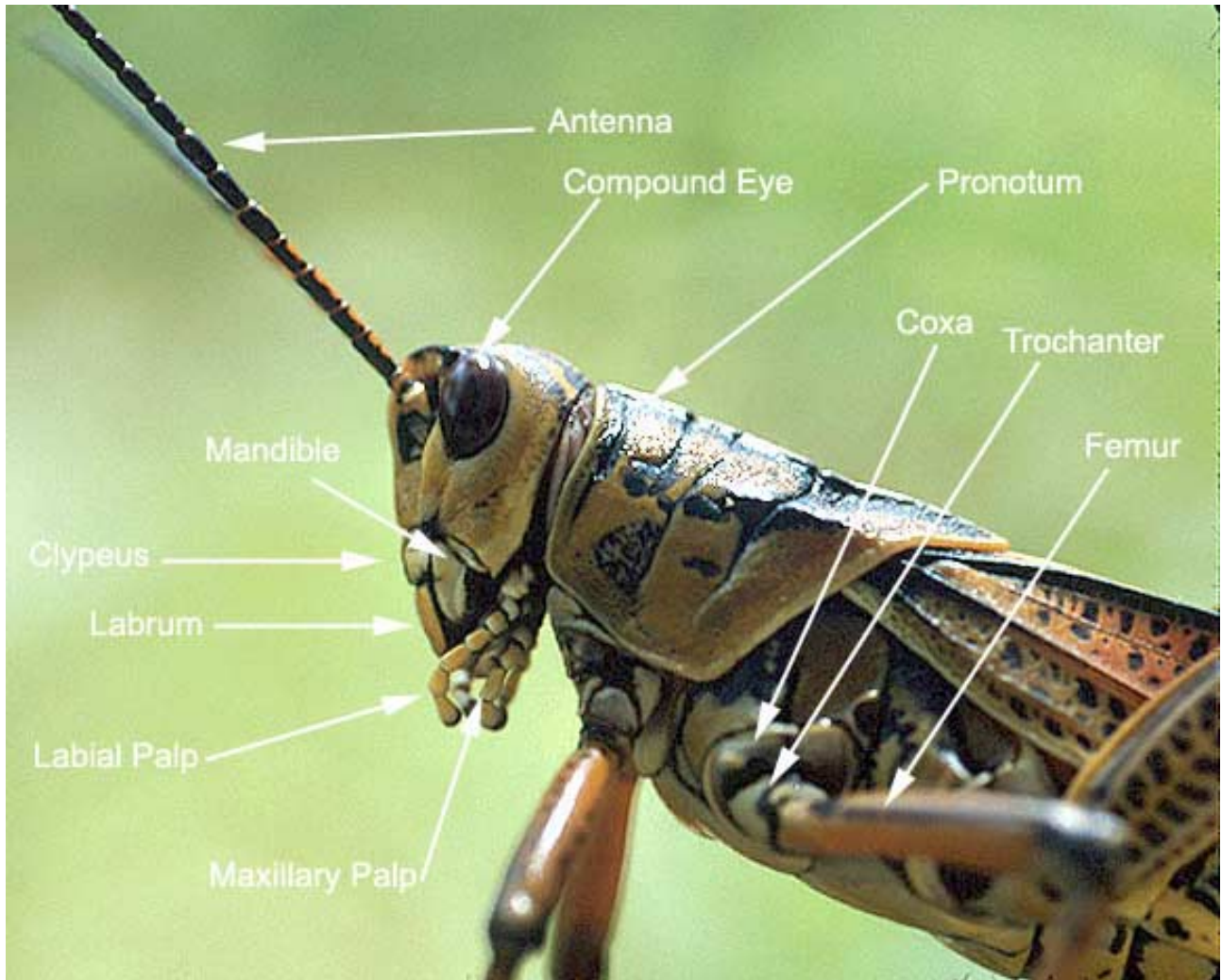


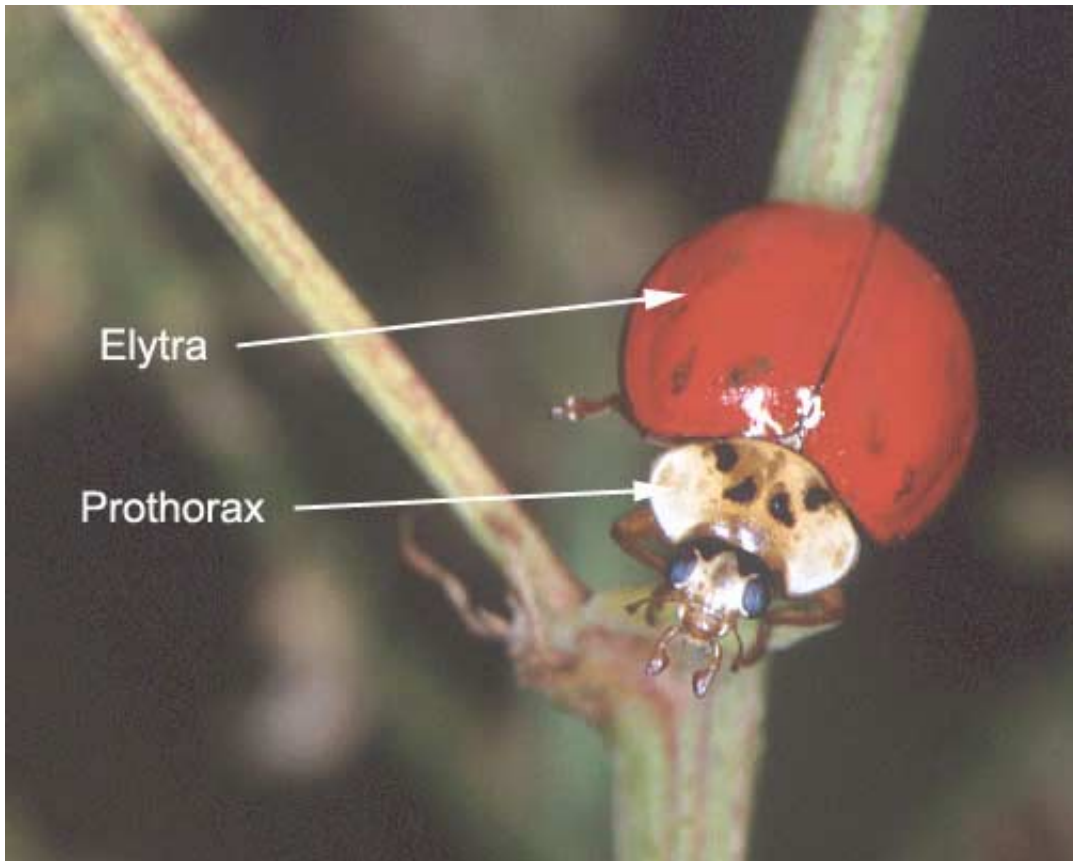




#### D. Other structures

1. **setae: socketed**
  - a. flattened setae = scales
2. **spines: unsocketed**
3. **suture - ingrowth of body wall**





[Return to Invertebrate Home Page](#)