



# Subphylum Myriapoda

Creatures of “10,000 feet”

# Four classes

- Diplopoda – millipedes
- Chilopoda – centipedes
- Symphyla – symphylans
- Pauropoda - pauropodans

# Body Plan

- 2 tagmata
  - Head
  - Trunk
- Uniramous appendages
- All terrestrial (modern species)

# Class Diplopoda

- “Twofold foot”
- To land in Devonian Period
- 11 to 100 trunk segments
  - Each segment is two fused segments
  - 2 pairs of legs per segment
- Circular cross section

# Diplopoda habitat

- Worldwide
- Found in or under
  - Leaf litter
  - Humus
  - Decaying logs
- Less waxy epicuticle → live in wet places

# Diplopoda habits

- Bulldoze through habitat
- Eat decaying plant matter (chewing, scraping, sucking)
- Defense
  - Curl into a ball
  - Release hydrogen cyanide

# Diplopoda Reproduction

- Male transfers sperm
  - Via gonopods (mod. trunk appendages)
  - In spermatophores
- Eggs fert. as laid
- Immatures get more legs with each molt until adulthood

# Class Chilopoda

- Nocturnal
- Live on forest floors
- Lack waxy epicuticle as well
- Flattened cross section
- 1 pair of legs/segment
- 15 or more segments



# Chilopoda feeding

- Fast predators
- Eat
  - small arthropods, worms, snails
  - frogs, rodents (larger centipedes)
- Poison claws paralyze prey for consumption

# Chilopoda and humans

- Most venom is harmless
- Some sting like a wasp
- Few reported deaths from tropical species

# Chilopoda reproduction

- Spermatophore laid on silk web
- Female introduces it to genital opening
- Eggs guarded or laid in soil
- Young gain legs with each molt



# Class Pauropoda

- Small, soft bodied, with 11 segments
- Live on forest floor
- Eat fungi & decaying organic matter
- Most exchanges through diffusion



# Class Symphyla

- Small, look like centipedes
- No eyes
- 12 segments
- Feed on decaying vegetation
- Some are pests of veggies and flowers



SubPhylum Hexopoda

# Movement to Land

- Preadapted exoskeleton
  - Support
  - Water conservation
- Flight
- Desiccation-resistant eggs
- Metamorphosis

# Basic Info

- 3 body segments
- 5 pairs of head appendages
- 3 pairs of legs



# Three Body Segments

- Head – antennae, mouthparts, compound eyes
- Thorax –
  - Wings attached to this segment
  - 3 pairs of legs on this segment
- Abdomen –
  - 10-11 segments
  - Genital structures

# Walking, Running, Jumping

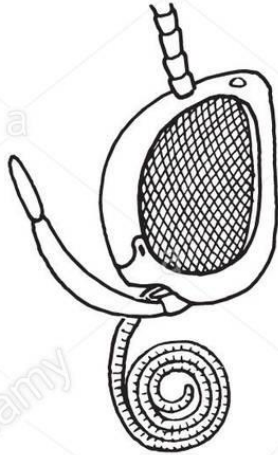
- Walking – at least 3 legs on ground; very stable
- Running – less than 3 legs on the ground ; less stable
- Jumping – large legs with enlarged muscles

# Mouthparts

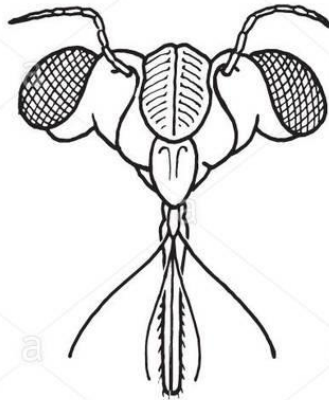
- Biting – grasshopper, caterpillar
- Sucking –
  - Pierce and suck – mosquitoes
  - Coiled maxillae – moths and butterflies
- Sponging – housefly

# Insect mouthparts

sucking

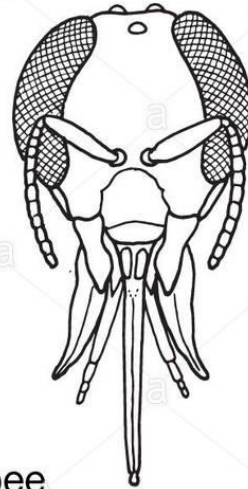


butterfly  
(side view)

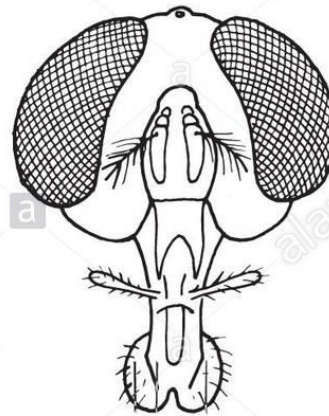


cicada  
(front view)

lapping

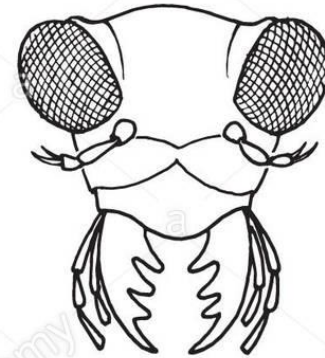


bee  
(front view)



housefly  
(front view)

chewing



beetle  
(front view)



grasshopper  
(side view)

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# Subphylum Crustacea

# Appendages

- 2 pairs of antennae
- 3 mandible for chewing or grinding
- 4-5 maxilla for food handling
- 6-8 maxillipeds accessory sensory and good handling
- 9-13 pereopods
  - 1<sup>st</sup> and largest is cheliped, large and pincer-like for defense and food capture

# Abdomen

- Pleopods (swimmersets)
  - Swimming
  - Females – brooding eggs
  - Males – 1<sup>st</sup> pair gonopods for clasping used in sperm transfer
- Flipper
  - Ends in anus
  - Uropod is fin like

# Eyes

- Adults
  - Compound eyes contain 25-14,000 photoreceptors
- Larva
  - Ocelli to orient toward surface



# Nervous System

- Chemoreceptors sample food and detect pheromones

# Excretion

- Solid waste via anus
- Nitrogenous waste
  - Through antennal glands in crayfish
  - Maxillary glands in other crustaceans
  - Also through joints in exoskeleton

# Reproduction

- Dioecious
  - After female molts, mating occurs
  - Male turns female over
  - Deposits non-flagellated sperm onto female
  - Fertilization occurs as eggs are shed
  - Eggs stick to pleopods
  - Free swimming larva called nauplius
  - Crabs have 2<sup>nd</sup> larval stage zoea