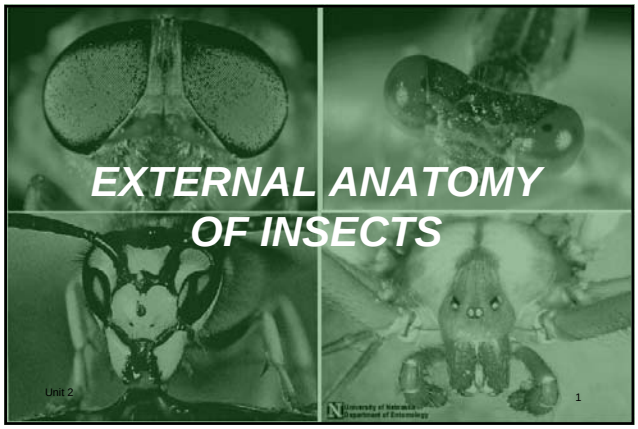
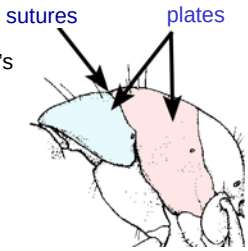


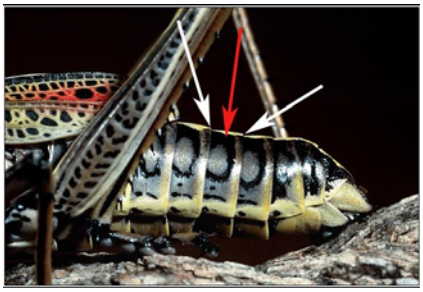
The insect's exoskeleton is made up of a series of plates



These plates make up the insect's exoskeleton.

These plates are connected by joints or sutures that make the skeleton flexible.

2



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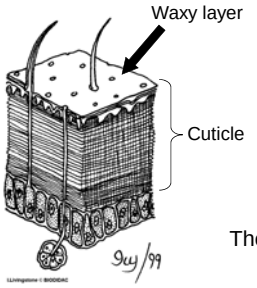
The outer layer of the exoskeleton is called the **cuticle**. The cuticle has an outer **waxy layer**.



The main component of the exoskeleton is **chitin**.

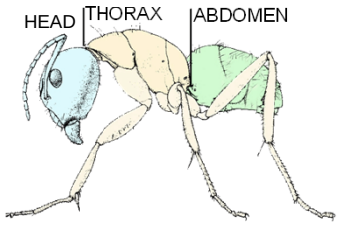
4

Purpose of the Exoskeleton

1. Supports the weight of the body.
2. Protects the body from minor injury.
3. Provides internal attachment point for the muscles.
4. Allows some chemicals to pass in or out of the body.
5. The waxy layer prevents desiccation (water loss).

5

Insects have 3 major body divisions:



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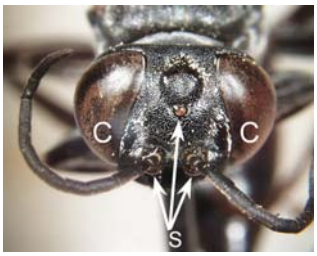
7

Insect Head - Eyes

Compound Eyes (C) -
made up of many small lenses, called ommatidia.
Purpose: detect movement, light intensity and color.

Simple Eyes (S) - "ocelli"
Insects have 0-3 simple eyes.
Purpose: detect light intensity.



8

Compound Eyes

Insect Head - Antennae

- Insects have one pair of antennae.
- May have the function of touch, smell, and in some cases, hearing.
- Used for navigation, food location, grasping (in some species)
- Used for detection of:
  - temperature
  - chemicals produced by plants or other foods
  - chemicals produced by other members of their species (pheromones)

10

Insect Head - Antennae

- Shape, number, and size of the segments are frequently used for identification.
- The overall appearance of the antennae are also used in identification.


plumose


lamellate


serrate


filiform


geniculate

11

INSECT ANTENNAE AS CHEMICAL DETECTORS

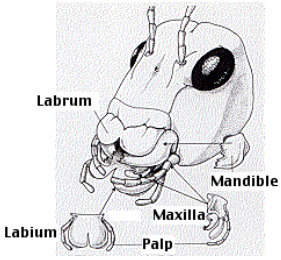
Insect Head - Mouthparts

•Variations in insect mouthparts are frequently used in the identification of insects.

•Mouthparts also tell us something about the food habits of the insect

Chewing type - "mandibles"

Examples - caterpillars, wasps, and grasshoppers



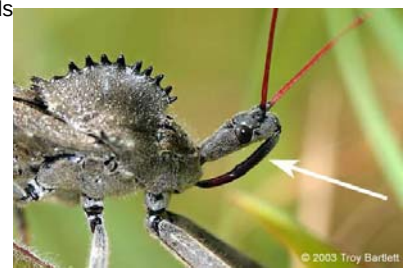
14

CHEWING MOUTHPARTS

Insect Head - Mouthparts

Piercing-sucking type - a proboscis that pierces tissue and sucks out fluids

Examples:
- Aphids
- Mosquitoes
- Wheel bug



PIERCING-SUCKING MOUTHPARTS

Insect Head - Mouthparts

Sponging type - consumes liquefied food (Ex - flies)

Siphoning type - consumes liquid food, such as flower nectar (Ex - butterflies)

Chewing-lapping type - Honey bees have "chewing mouthparts" but they form a "tongue" for lapping up liquid foods.

18

Siphoning Mouthparts

19

Honeybee Feeding

20

Insect Thorax

Size and shape of the legs and wings are important characteristics for identifying insects

21

Insect Thorax

Contains the appendages for movement

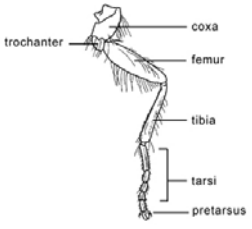
– Insects have three pairs of legs

– Insects are the only invertebrates capable of active flight.
They have 0-2 pairs of wings.

– Only adult insects have wings

22

Insect Leg



23

Insect Legs

24

Insect Flight

25

Snowy Tree Cricket

- Males rub parts of their wings (“scraper” and “file”) together to make the chirp

26

Insect Abdomen

Contains most of the vital organs for:

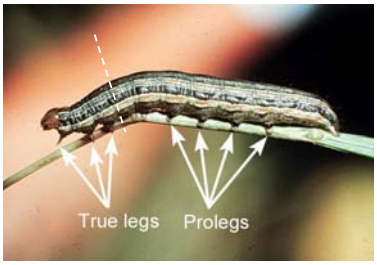
- Digestion
- Circulation
- Excretion
- Reproduction.

“Tymbals”

28

Abdominal Appendages - Prolegs

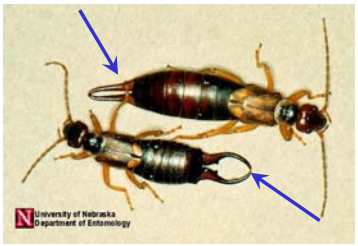
- Found on:
  - caterpillars
  - sawflies
- Not segmented like the true legs
- Not found on adult insects



29

Abdominal Appendages - Cerci

- Segmented sensory organs on the end segment of abdomen.
- Most noticeable on
  - earwigs
  - cockroaches
  - crickets



30

Abdominal Appendages - Ovipositor

- Found only on female insects
- Used for laying eggs

31

Abdominal Appendages - Stinger

- A modified ovipositor
- Found only on females insects
- Used for defense or catching prey

32

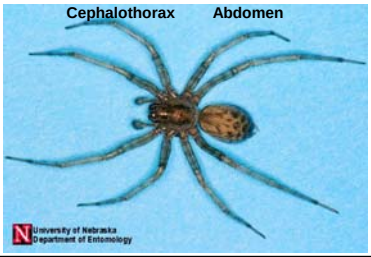
HONEY BEE STINGER

Spiders, Mites, and Ticks

Spiders, mites, and ticks have two body divisions:

Cephalothorax - fused head and thorax

Abdomen - similar to that of insects

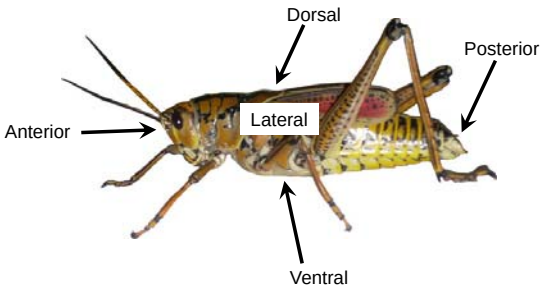


Spiders, Mites, and Ticks

Mouthparts - chelicerae

35

Insect Body Aspects



36

QUESTIONS?

37