

# General Entomology

## Lecture (6)

**Dr. Sanaa Alhadidi**

**Biology Department**

**Collage of Science**

**University of Diyala**



# Lecture Topics

- **Insects Body parts**

## **II. Thorax**

- **Legs**

- **Wings**

Dr. Sanaa Alhadidi

# Wings

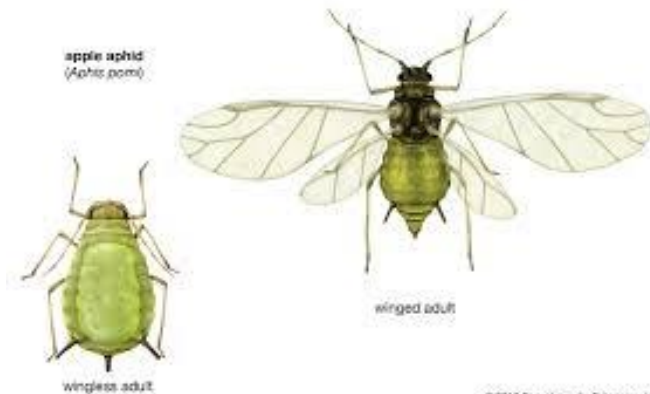
- Insects are the only invertebrates that can fly.
- Based on the presence or absence of wings, there are two subclasses  
Sub class 1. Apterygota 2. Pterygota.
- The primitive apterygotes are wingless e.g., Silver fish
- Sometimes wings may be reduced in pterygotes e.g., Mallophaga.
- In coccids, only males are winged; and aphids may or may not have



Silver fish



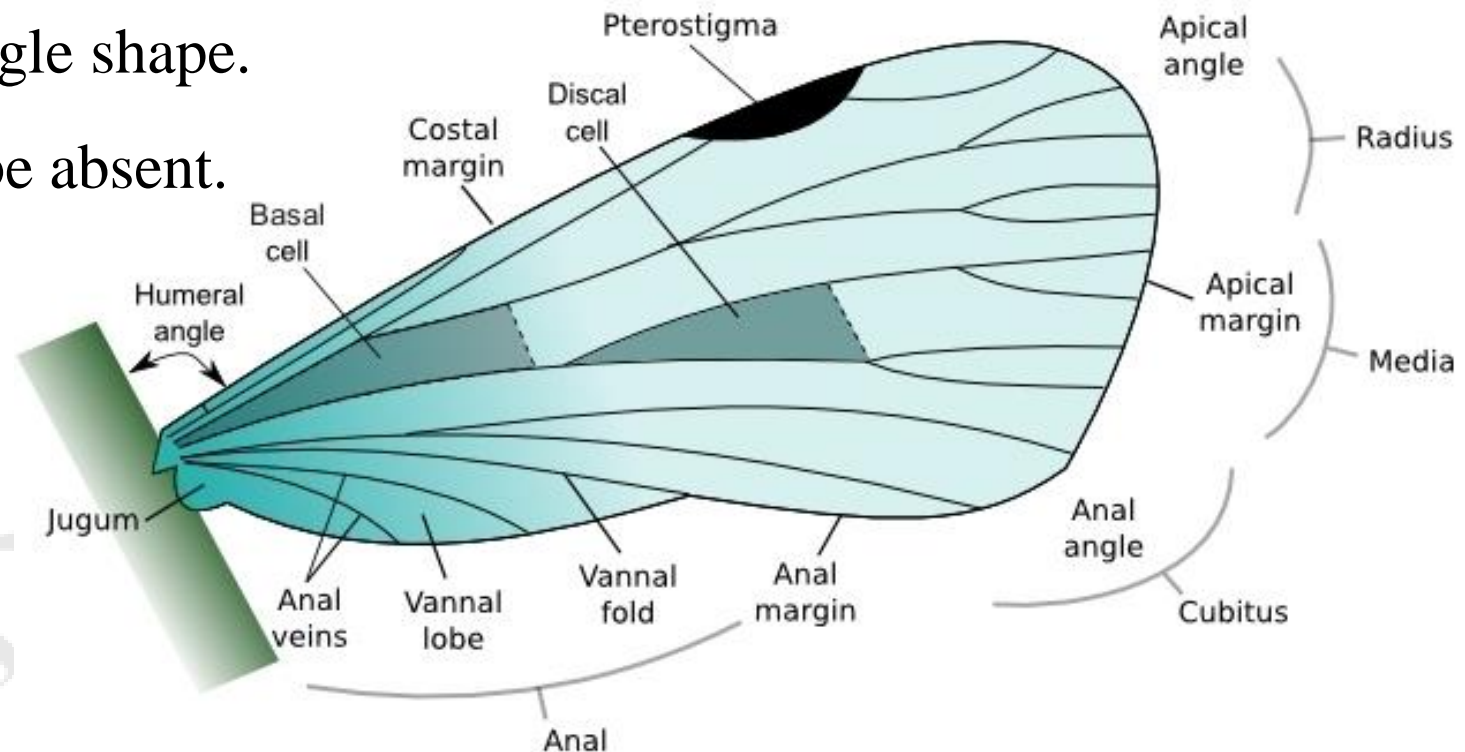
Mallophaga



Winged and wingless aphids

# Wings

- Wings exist only in the adult forms.
- Wings are thin flat structures consisting of two fine membranes supported by a series of veins.
- Veins show modifications > useful in identification.
- Nearly triangle shape.
- Veins may be absent.

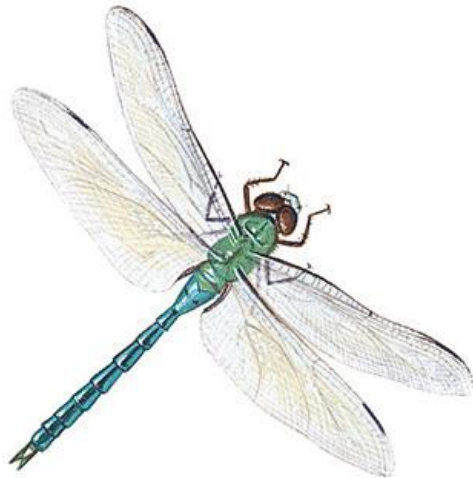


# Wings

Mainly concerned with flight, there is different types of wings

## 1. Membranous

- Naked thin with clear venation.
- Always useful of flight
- e.g.: Both the wings of Dragonflies, bees and wasps
- Hind wings of grasshopper, beetles etc.



Dragonfly



**BEE**



**WASP**

# Wings

## 2. Elytra

- Hard, shell like without clear venation.
- They form horny sheet and protect the membranous hind wings and abdomen.
- e.g. Forewings beetles.



beetle

# Wings

## 3. Hemelytra

- The base of the wing is thick like elytra and the remaining half is membranous.
- They are useful of protection and flight.
- e.g. Forewings of bugs



True bug

# Wings

## 4. Tegmina

- Forewings are leathery and tough.
- They protect the membranous hind wings.
- e.g., forewings of cockroach and grasshopper.



cockroach



grasshopper



# Wings

## 5. Scaly wings

- Wings thin , membranous but covered with unicellular scales all over the surface.
- They are useful for flight.
- e.g.: Both the wings of moths and butterflies.



moth



butterfly

# Wings

## 6. Fringed wings

- Wings are highly reduced with reduced venation.
- The wings are fringed with long marginal hairs giving a feather like appearance.
- e.g., Both the wings of thrips.



**thrips**  
(Thysanoptera)

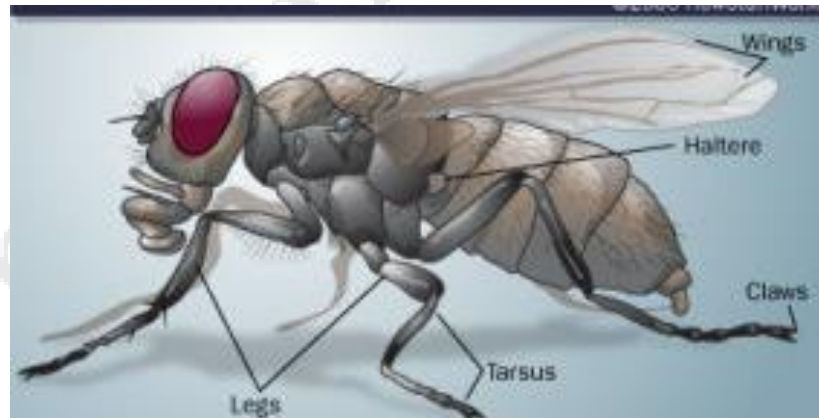
# Wings

## 7. Halteres

- The hind wings of houseflies are modified into small microscopic structures called halteres.
- They act as balancers.
- e.g. Hind wings housefly and front wings of male stylopids.



halter



housefly



stylopids

# Usfel link

<http://courseware.cutm.ac.in/wp-content/uploads/2020/06/Insect-Wing-1.pdf>

Dr. Sanaa Alhadidi

# THANK YOU



FOR LISTENING