



GENERAL CHARACTERS OF INSECTS AND CLASSIFICATION

MEDICAL ACADEMY NAMED BY S.I.GEORGIEVSKY "CFU NAMED BY V.I.VERNADSKY

DEPARTMENT OF MEDICAL BIOLOGY

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Phylum

ARTHROPODA

General Characters



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What is an insect?



Dragonfly



Cricket



House Fly



Flea



Hawk Moth



Giant Water Bug



Assassin Bug

An insect is an arthropod. That means it has a hard exoskeleton with jointed appendages. Insects have six legs and three body regions. (Head, Thorax, Abdomen)

The head has two antennae and two compound eyes. The mouthparts can be adapted for different activities such as chewing or piercing-sucking. The thorax has the legs and two pair of wings on most insect adults. The abdomen is segmented and somewhat flexible.

Breathing holes, called spiracles, line each side of the body.

As it develops, it goes through different life stages in a process called metamorphosis.



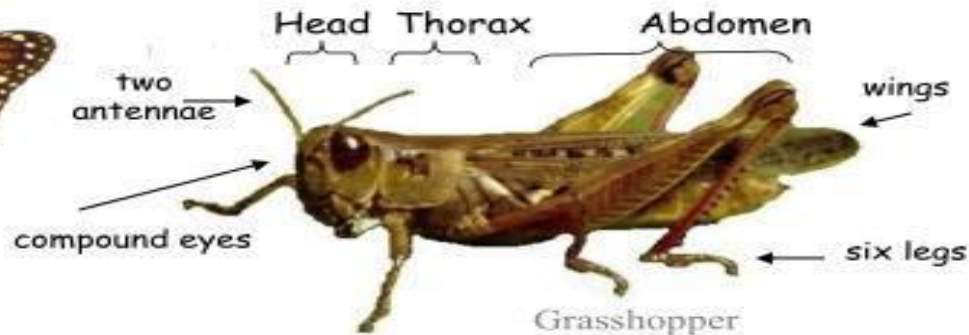
Earwigs



Ground Beetle



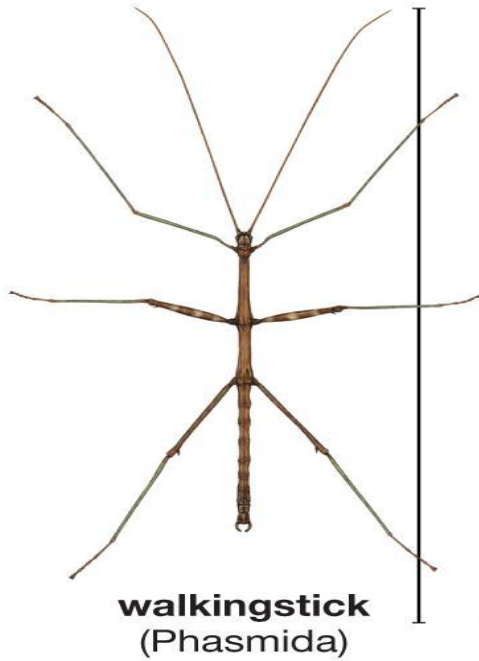
Monarch



Grasshopper



Luna Moth



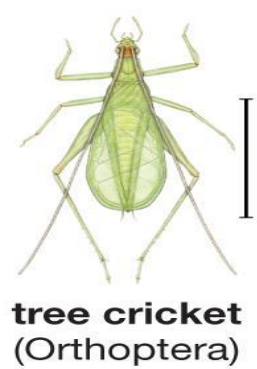
walkingstick
(Phasmida)



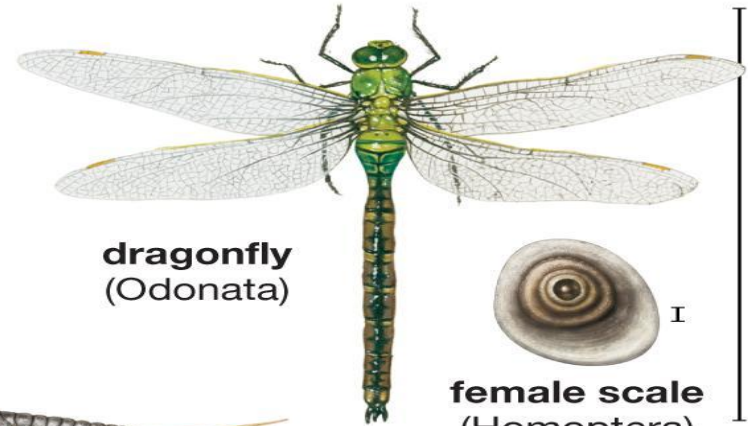
earwig
(Dermaptera)



stonefly
(Plecoptera)

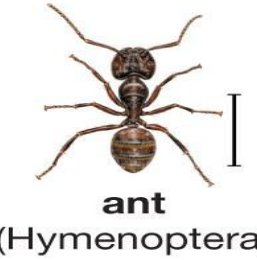


tree cricket
(Orthoptera)



dragonfly
(Odonata)

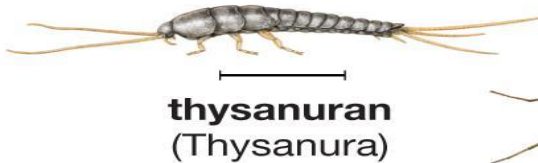
female scale
(Homoptera)



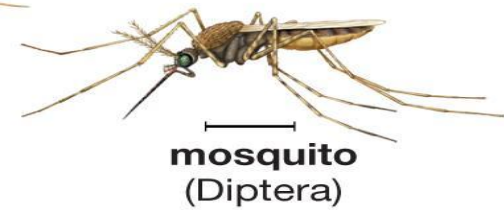
ant
(Hymenoptera)



sucking louse
(Anoplura)



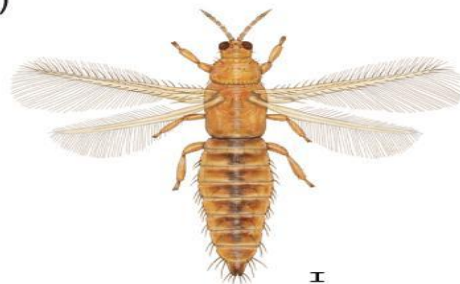
thysanuran
(Thysanura)



mosquito
(Diptera)



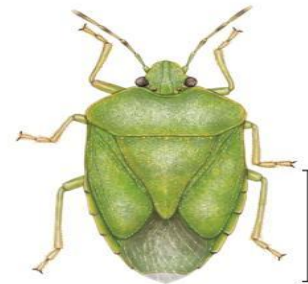
cat flea
(Siphonaptera)



thrips
(Thysanoptera)



scarab beetle
(Coleoptera)



stinkbug
(Heteroptera)



cabbage butterfly
(Lepidoptera)

Body :-

Divided in to three distinct regions
Head , thorax and abdomen

Head :

One pair of antennae (olfactory)

One pair of compound eyes and many simple eyes called ocelli

Mouthparts variously modified for piercing and sucking, siphoning, sponging,

biting and chewing

Thorax :-

Three segmented

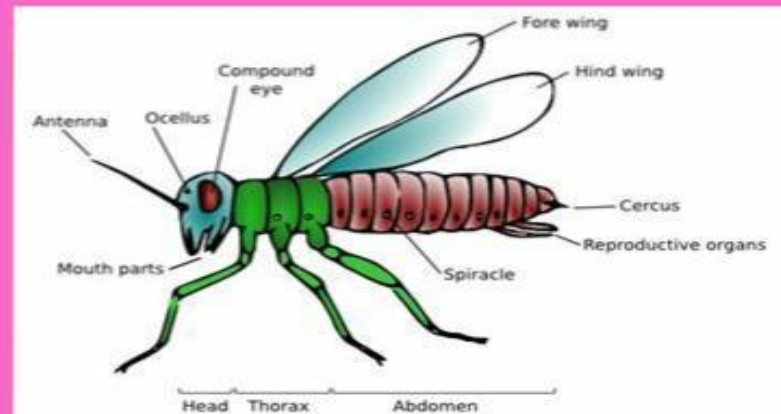
Each segment with a pair of legs

Two pair of wing on meso and metathorax

Abdomen :-

Consist of eleven or fewer segments ,
with out appendages Except a pair of
anal cerci on last segment

Genital opening at posterior
end of abdomen



Classification of Class Insecta

Naeem Javid M. Hassani
of Mastung, Balochistan

Class Insecta

Sub-Class

Pterygota (Winged insects)

Sub-Class

Apterygota (Wingless insects)

Orders:

1. Thysanura - Silver Fish
2. Collembola - Spring tails
3. Diplura - Campoda silver fish
4. Protura - Proturon

Endopterygota:

1. Lepidoptera - Butterflies, moths
2. Coleoptera - Beetles
3. Hymenoptera - Bees, ants, wasps
4. Diptera - Ture flies, mosquitoes
5. Siphonoptera - Fleas
6. Neuroptera - Lace wings, ant lions
7. Mecoptera - Scorpion flies
8. Tricoptera - Caddis flies

Exopterygota

1. Orthoptera - Grass hopper, cricket
2. Dictyoptera - Cockroaches, Mantids
3. Hemiptera - Bugs
4. Homoptera - Aphids, Plant hoppers
5. Odonata - Dragon flies
6. Isaptera - Termites
7. Thysanoptera - Thrips
8. Anaplura - Sucking lice
9. Plecoptera - Stone flies
10. Dermoptera - Earwigs
11. Phasmida - Stick and leaf insects
12. Ephimeroptera - May flies
13. Malophaga - Chewing lice

Familiar Insect Orders



Hymenoptera: bees, wasps & ants; many social species



Coleoptera: beetles; hardened wings called **elytra**



Lepidoptera: moths and butterflies; nectar-feeding (proboscis)



Orthoptera: grasshoppers, crickets and locusts



Diptera: “true” flies, mosquitoes, gnats

The Hymenoptera is divided into two suborders: the Symphyta and the Apocrita.

Symphyta (sawflies and horntails)



thorax broadly joined to abdomen



ovipositor of horntail wasp



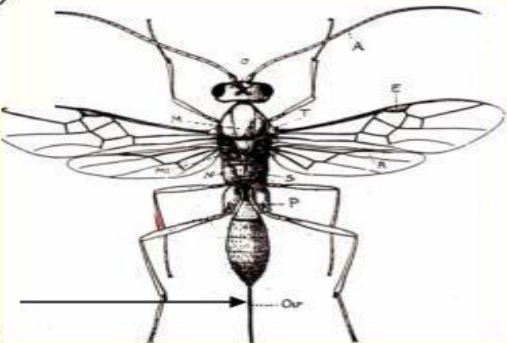
ovipositor saw-like in sawflies

Apocrita (bees, ants, parasitoids etc.)

thorax narrowly joined to abdomen



ovipositor modified into stinger





HYMENOPTERA (SAWFLIES, PARASITIC WASPS, ANTS, WASPS, AND BEES)

- Antennae: Long and filiform (hairlike) in Symphyta; many forms in Apocrita
- Other characteristics: Abdomen is broadly joined to the thorax in Symphyta; constricted to form a "waist"-like propodeum in Apocrita.



CREATURES OF THE ORDER COLEOPTERA



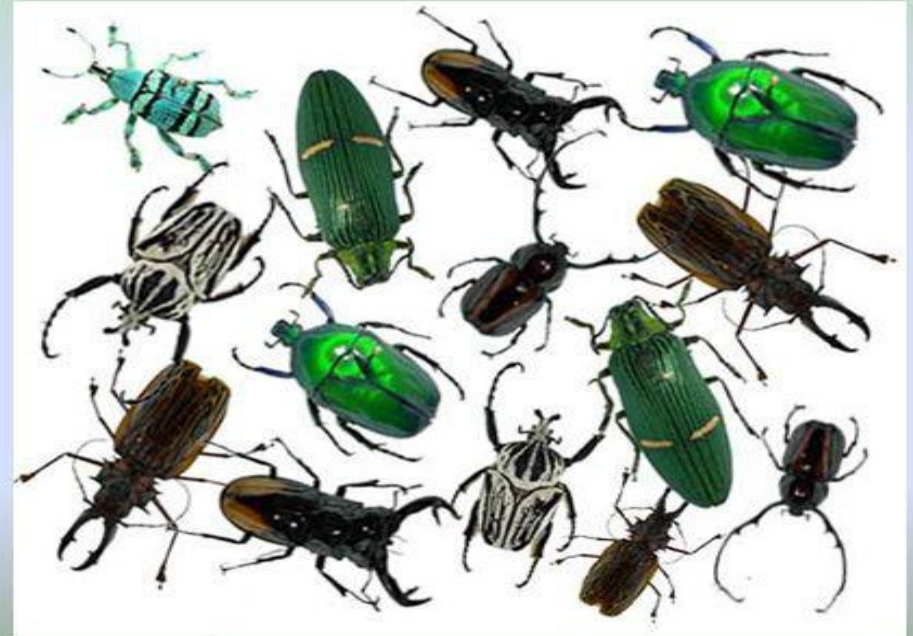
1. SCARLET LILY BEETLE 2. PINK SPOTTED LADY BEETLE 3. TWENTY-TWO SPOT LADYBEETLE 4. VARIED CARPET BEETLE 5. RUBY GRAY LADY BEETLE 6. PHOTURID LUCYRESTID 7. PHAENOSOMA DEMON 8. ONYMPHIS CAMPIDIPENSIS 9. BLUE FUNGUS BEETLE 10. VIOLIN BEETLE

11. STRIPED WILLOW LEAF BEETLE 12. GOLDEN BEETLE 13. GREEN TIGER BEETLE 14. ACICUS SULCATUS 15. BANNED CUCUMBER BEETLE 16. GRAPVINE BEETLE 17. CRYPTOPHAGUS PSEUDOMACULUS 18. MACYNOSSA POLYPHEMUS 19. GOLDEN GROUND BEETLE 20. LARDER BEETLE

21. GOLDENROD SOLDIER BEETLE 22. CARUCIDONNUS LUNATUS 23. STAG BEETLE 24. HORSE-BEAN LONGHORN BEETLE 25. COLORADO POTATO BEETLE 26. TEMNOPHATHA ALTERNATA 27. EUPHOLUS SCHONHERRII 28. HERCULES BEETLE 29. MACRODONTIA CERVICORNIS 30. RED SHOULDER LYCID BEETLE 31. GOLIATH BEETLE

Order Coleoptera

- This order is commonly called **Beetles**.
- Its name derived from Greek *koleos*, "sheath"; and, *pteron*, "wing", thus "sheathed wing", which contains more species than any other order in the animal kingdom.
- largest orders of insects, with 350,000–400,000 species. No other group of animals vary as much in size, shape and color.



ORDER: Coleoptera – Beetles

- Suborder Adephaga: notopleural suture (seam) on prothorax
 - aquatic; hind legs fringed with hairs and flattened, metasternum without transverse suture anterior to coxae
- Suborder Polyphaga: notopleural sutures absent
 - Superfamily Scaraboidea:
 - antennae with an asymmetrical club of 3-8 segments
 - fore coxae large, projecting below prosternum
 - fore tibia flattened, with 1 or more teeth on outer edge
 - antennal segments of club can't close

4. **Passalidae** – Bessbugs

5. **Lucanidae** – Stag Beetles (24)

- dorsal surface evenly rounded
- mentum simple

Feed on fluids of decaying wood;
Male mandibles for combat

[video](#)



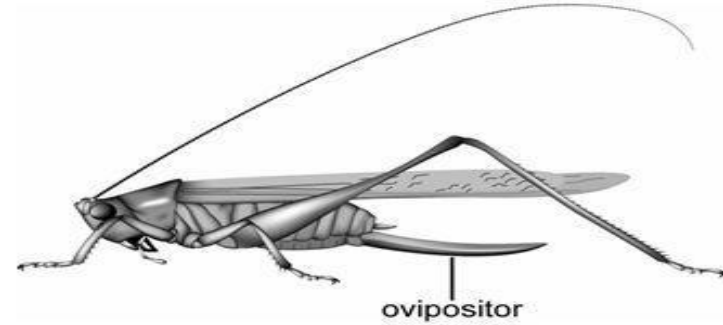
CREATURES OF THE ORDER
LEPIDOPTERA



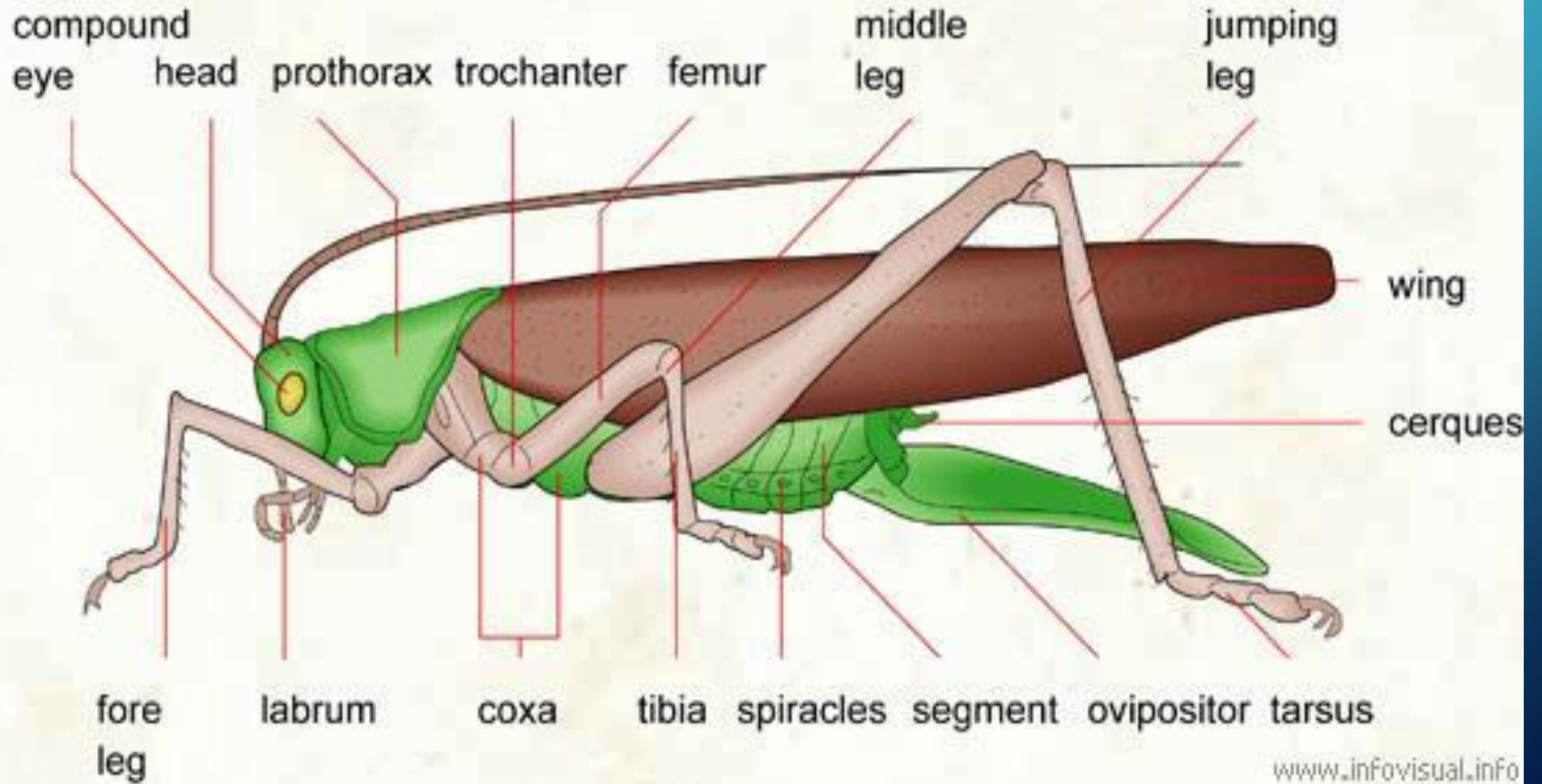
1. LUNA MOTH 2. VIRGIN TIGER MOTH 3. HIEROGLYPHIC MOTH 4. GRAY HAIRSTREAK 5. BELLA MOTH 6. GLAUCOUS TIGER 7. MONARCH 8. COMMON SOOTYWING 9. SAPHO LONGWING 10. BLACK SWALLOWTAIL 11. DANUBE CLOUDED YELLOW 12. CECROPIA MOTH 13. POPLAR HAWK-MOTH 14. ISABELLA TIGER MOTH 15. GARDEN TIGER MOTH 16. JULIA BUTTERFLY 17. DEATH'S HEAD HAWK-MOTH 18. 10 MOTH 19. RAJAH BROOKE'S BIRDWING 20. FOREST MOTHER-OF-PEARL 21. DELAWARE SKIPPER 22. EMPEROR MOTH 23. CINNABAR MOTH 24. SACRIFICIA HIEROGLYPHICA 25. LONG-TAILED SKIPPER 26. COMMON BUCKEYE 27. ZEBRA LONGWING 28. BLUE MORPHO 29. DORSAS COPPER

Orthoptera

- Grasshoppers, locusts, crickets, katydids
- Very long bodies
- Rear legs modified for jumping
- Females with egg laying tube (ovipositor on end of abdomen)
- Often communicate with chirping sounds



MORPHOLOGY OF AN ORTHOPTERA





ORDER DIPTERA

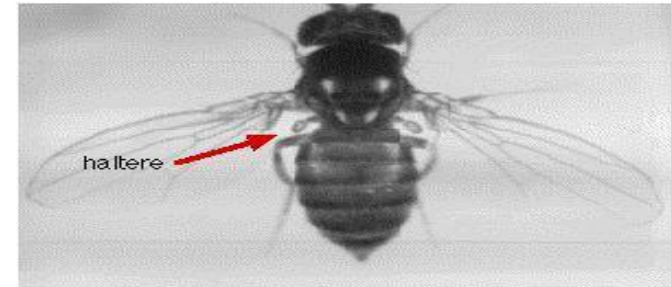
Reduced hind wings

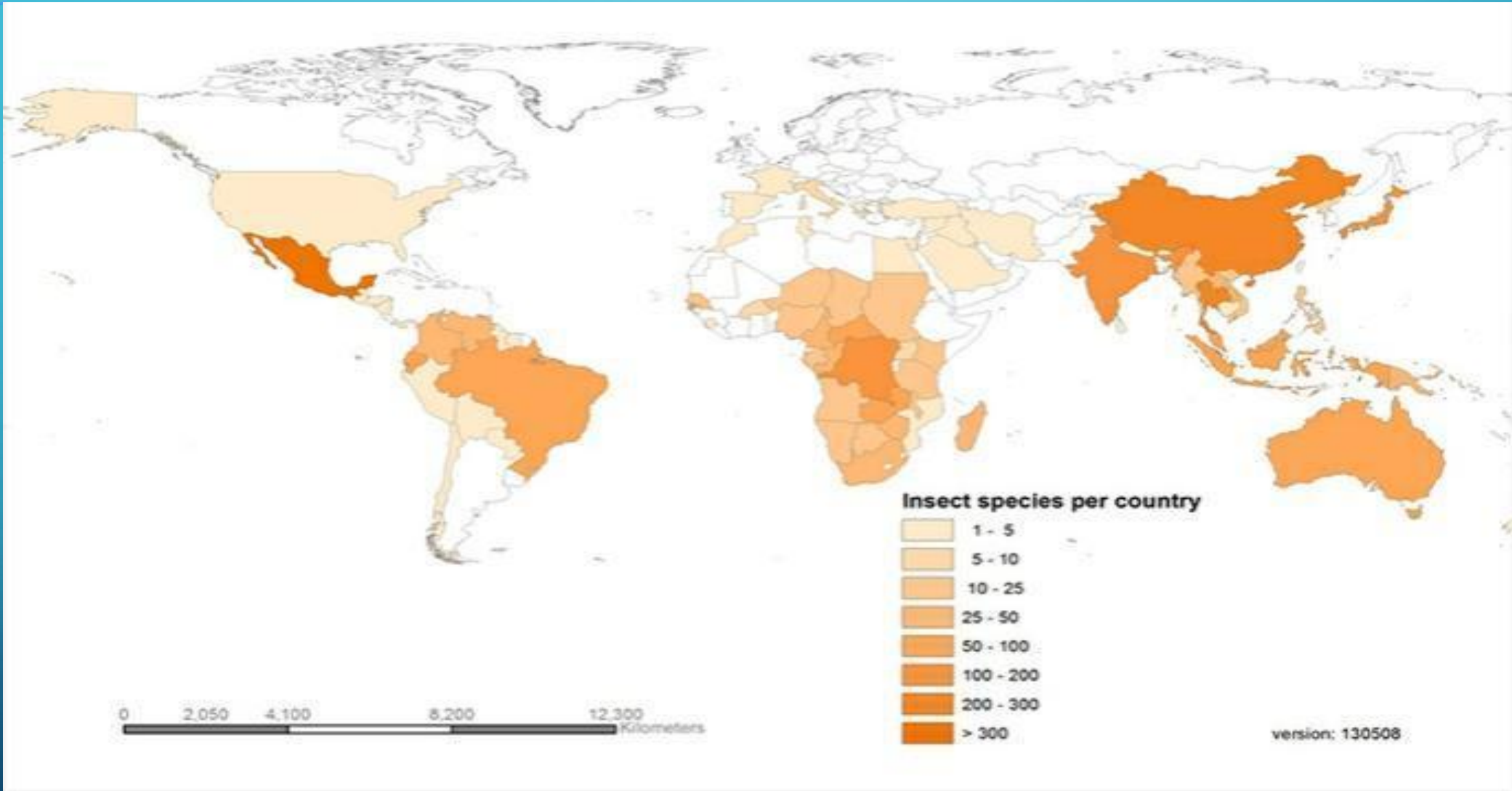
Suction mouths

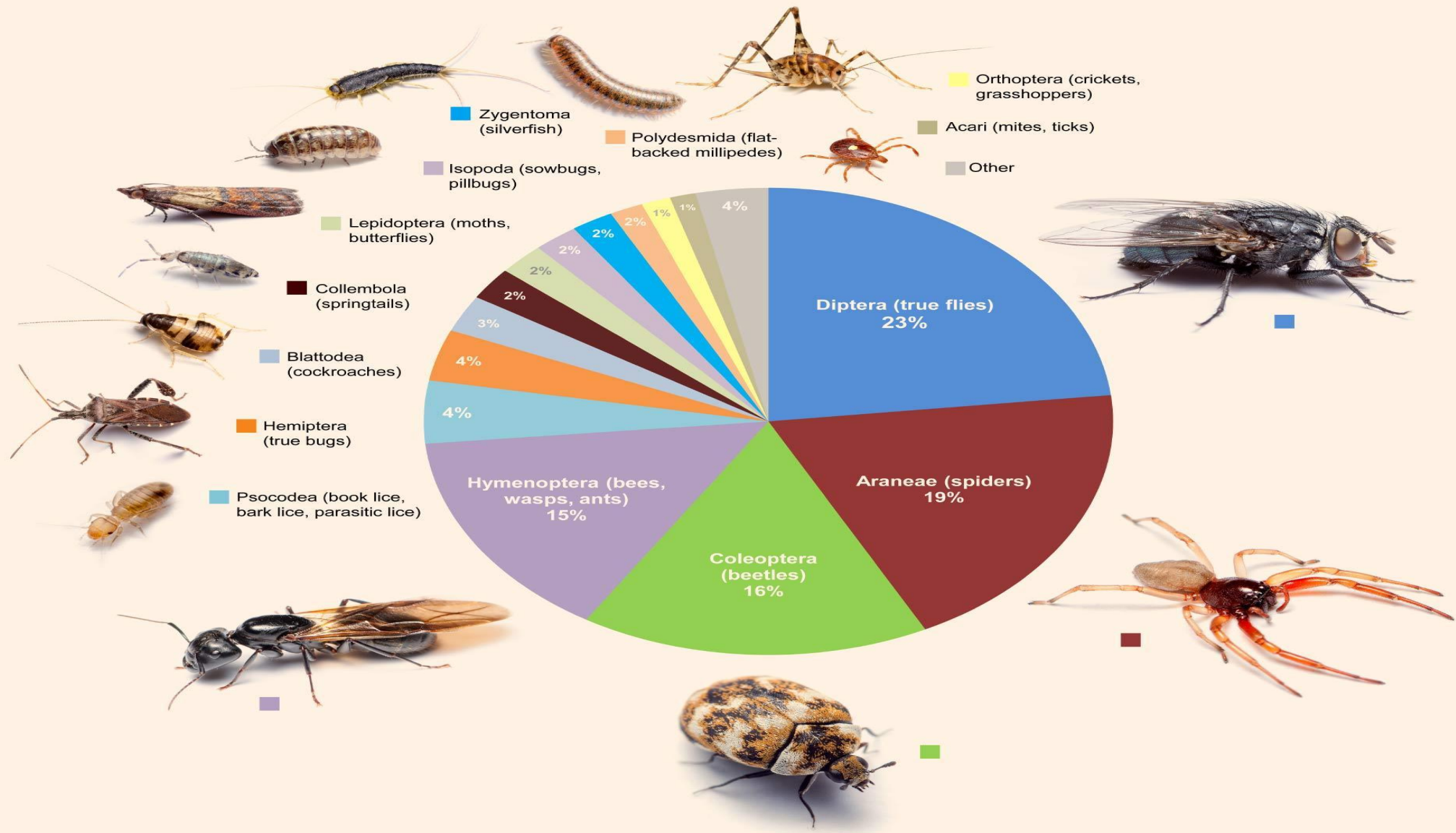
Larvae called maggots

General Characteristics of Diptera

- Holometabolus
- One pair of flight wings, one pair of halteres
- Many larvae are aquatic/semiaquatic
- Adult mouthparts are usually adapted for taking liquid food (some are non-functional or absent).







Zygentoma (silverfish)

Isopoda (sowbugs, pillbugs)



Lepidoptera (moths, butterflies)



Collembola (springtails)



Blattodea (cockroaches)



Hemiptera (true bugs)



Psocodea (book lice, bark lice, parasitic lice)



■



Polydesmida (flat-backed millipedes)



■



Orthoptera (crickets, grasshoppers)



Acari (mites, ticks)



■



■

VIDEO LINKS

- https://youtu.be/dwmJ8yt_3pY
- https://youtu.be/QL906_79HJM
- <https://youtu.be/PZtT9SLOzYU>

