Taxonomy of Insects

Lecture (1)

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Lecture Topics

- What is Taxonomy?
- Scientific classification
- Classification of Insecta
  - Subclass Apterygota

What is Taxonomy?

- ***Taxonomy*** is the science of finding, describing, classifying, and naming organisms, including the studying of the relationships between taxa and the principles underlying such a classification.
- Taxonomy is the branch of biology that classifies all living things.
- It was developed by the Swedish botanist *Carolus Linnaeus*.
- *Linnaeus* invented binomial nomenclature, the system of giving each type of organism a genus and species name.
- Linnaeus also developed a classification system called the taxonomic hierarchy, which has seven ranks: kingdom, phylum, class, order, family, genus, and species.

Scientific classification

Ex. *Musca domestica* (housefly) (Linnaeus, 1758).

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Diptera

Family: Muscidae

Genus: *Musca*

Species: *domestica*

Classification of Insecta

Class Insecta

Sub-Class

Pterygota (Winged insects)

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

Sub-Class

Aptrygota (Wingless insects)

Orders:

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

Classification of Insecta

✓ The class hexapoda (insects) is divided in two subclasses:

➢ Subclass: Apterygota (= primitive wingless insects).

➢ Subclass: Pterygota (= winged and secondarily wingless insects).

✓ The subclass Pterygota is divided in two divisions:

- Division: Exopterygota (= insects have externally developing wings with a simple metamorphosis, without pupal stage).
- Division: Endopterygota (= insects have internally developing wings with a complete metamorphosis, including a pupal stage).

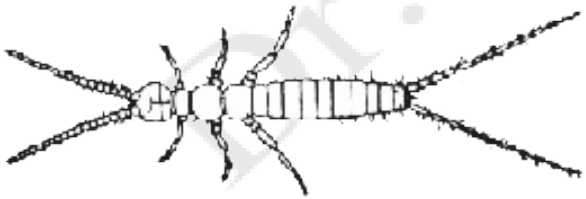
Subclass Apterygota

- Has six legs
- Wingless insects.
- Primitive insects
- Possess incomplete metamorphosis- young is similar to the adult.
- Very small insects - smaller than 2cm.
- They are mostly found in soil and damp places, such as under leaves.
- There is argument about the classification of Apterygota however, we will considère classifying it to four ordres (Diplura, Thysanura, Protura, Collembola).

Subclass Apterygota

Order: Diplura

- Elongated with long slender antennae, and less than 10 mm in length.
- Their two tail filaments can be long and thin, short and thick, or in the form of pincers.
- Diplurans are widely distributed in soil, leaf litter, and rotting logs.
- More than 800 species have been described.
- Mostly white or yellowish.
- Eyeless (blind).



Subclass Apterygota

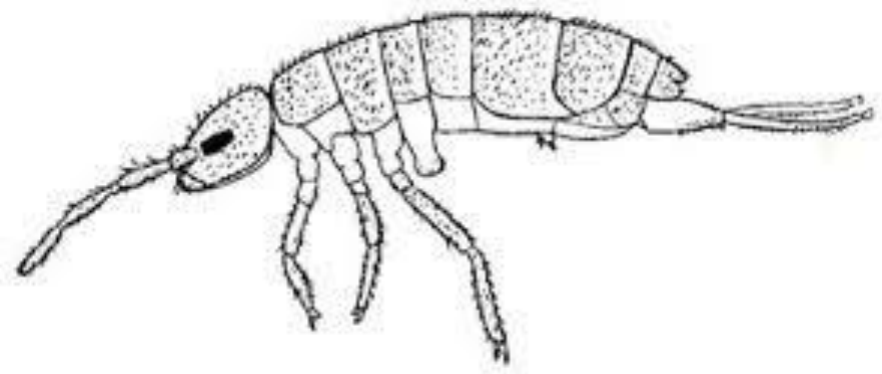
Order: Protura

- Elongated and very small, less than 2 mm long
- Distributed throughout the world in soil and leaf litter,
- Their number about 800 species
- Legs 5-segmented and fore legs enlarged, with many sensillae.
- Antennae absent- front legs serve role of antennae.
- Abdomen with 12 segments
- Eyeless and cerci absent

Subclass Apterygota

Order: Collembola (Springtails)

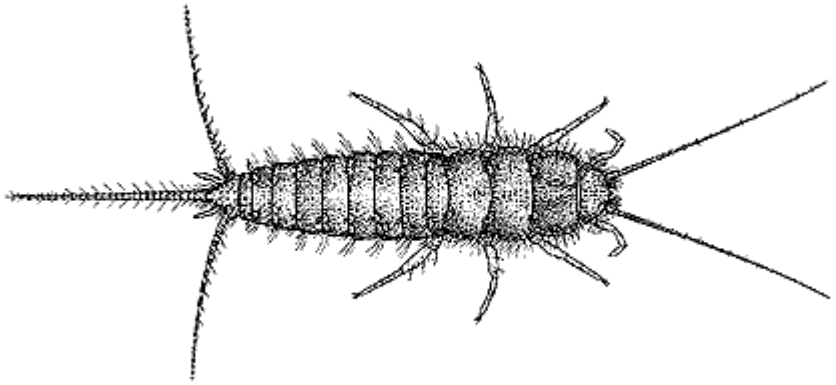
- Widest distribution of any hexapod group, occurring throughout the world, including Antarctica.
- Diverse in form, coloration, and habitat.
- Found in soil, leaf litter, logs, dung, cave, shorelines, etc.
- Approximately 8200 known species.
- Most species are less than 3 mm in length, but some range to10 mm.



Subclass Apterygota

Order: Thysanura (Silverfish)

- Flattened body often covered with scales.
- Compound eyes separated small or absent.
- Abdomen with ten complete segments.
- Eleventh abdominal segment elongated to form a median caudal filament (Telson).
- Cerci present, nearly as long as median caudal filament.



Usfel websites

https://www.biologyonline.com/dictionary/taxonomy

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https://bijlmakers.com/insects/insect-classification/

https://www.amentsoc.org/insects/fact-files/orders/apterygota.html

http://www.dropdata.org/entomology/Apterygota_Ephemeroptera_6.pdf

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Thanks for listening