

Lab Exercise 5 - Wingless insects and relatives to Orthoptera

Introduction

In this laboratory, and in the following laboratory exercises, we will place insect groups on display for you. You will look representatives at these major groups and you will also be able to use laboratory time for identification of specimens in your insect collection. We will begin by describing several orders of wingless insects (Subclass Apterygota) and winged insects (Subclass Pterygota). You have seen a number of these insects in previous exercises.

Subclass Apterygota: indeterminate development; no wings; abdomen bears style like appendages; tied to moist environments, often detritivores

- Order Diplura- small (< 7 mm); no compound eyes; two abdominal filaments; cone shaped head with piercing sucking mouthparts withdrawn inside the head capsule (endognathous).
- Order Collembola (springtails)- small (< 6 mm) often have a forked springing organ on 4th abdominal segment, which allows them to jump up to 10 cm; live in leaf litter; chewing mouthparts withdrawn inside the head capsule.
- Order Thysanura (silverfish)- small to moderate sized; three appendages at end of abdomen; long slender antennae; may molt dozens of times; body often covered with scales; mouthparts not withdrawn inside head capsule (ectognathous).

Subclass Pterygota: consists of most insects; possess wings (some forms have subsequently lost wings); thorax enlarged and strengthened for wing support; undergo metamorphosis

Terrestrial pterygote orders

- Order Orthoptera (grasshoppers, katydids, crickets)-well developed cerci and often long ovipositor; leathery forewings that produce sound, relatively long antennae, tarsi with 3-4 segments; chewing mouthparts; hind legs enlarged for jumping.
- Order Dictyoptera (roaches and mantids)-leathery forewings; enlarged pronotum; tarsi with 5 segments; no auditory organs. Suborder Blattarea (roaches) has shield like pronotum; flattened body, waxy integument, and ceaselessly moving antennae. Suborder Mantoidea (mantids) has an elongated body with an elongated prothorax; modified forelegs for grasping prey; and a freely movable head.
- Order Dermaptera (earwigs)-tarsi with 3 segments, cerci modified into forceps structure, wings do not cover abdomen.
- Order Isoptera (termites); abdomen broadly joined to thorax, front and hind wings similar in size, usually white in color, consist of social groups with castes: worker, soldier, and reproductive.