

Lab Exercise 9 - Flies, lacewings, butterflies and moths

Introduction

In this laboratory, you will learn about representatives of the Diptera, Neuroptera, and Lepidoptera. As a part of the laboratory, you will key four insects to family.

Order Neuroptera: This group consists of predatory insects that feed primarily on other insects. Larvae may be terrestrial or aquatic, while adults are terrestrial, with similar, large, membranous wings. This group includes snake flies (Raphidiidae), antlions (Myrmeleontidae), and green lacewings (Chrysopidae).

Order Lepidoptera: Everyone is familiar with this group, the butterflies and moths. Representatives range from small to large, possess large compound eyes, long antennae, and reduced mouthparts. Lepidopterans have scales on their wings. Butterflies are usually diurnal and have brightly colored wings, while moths are usually nocturnal with greyish wings. There are many more species of moths than butterflies.

Order Diptera: The flies are a diverse group with several distinct suborders. They are also a very advanced and specialized group of holometabolous insects. Flies have two wings and halteres, which help balance the insect. Fly larvae usually lack legs and have a reduced head. Adults feed on other insects, flowers, or decaying material. Some are blood parasites of vertebrates. Flies are usually very visually oriented.

- Suborder Nematocera- These are slender, long-legged insects with antennae that possess six or more segments. Larvae have a distinct head. Includes the crane flies (Tipulidae), Culicidae (mosquitoes), and midges (Chironomidae, Ceratopogonidae).
- Suborder Brachycera- These flies have three segmented antennae. Adults have stout bodies. Includes Tabanidae (deer and horseflies), Asilidae (robber flies), Syrphidae (hover flies), Bombyliidae (bee flies), Conopidae, Dolichopodidae, Otitidae, Drosophilidae (fruit flies), Sarcophagidae, Calliphoridae (blow flies), and tachinid flies (Tachinidae).

Activity 1- Examination of critical key characters

To key flies correctly using Bland and Jaques, you need to be able to distinguish several critical characteristics 18, 30, 35, 51. We have prepared boxes with specimens that illustrate each characteristic. Examine the boxes carefully. Write the wording used in the Bland and Jaques key below then write a brief description of the appearance of each form of the characteristic.

Couplet 18

18a. _____ (Bland and Jaques)

18b. _____ (Bland and Jaques)

Couplet 30

30a. _____ (Bland and Jaques)

30b. _____ (Bland and Jaques)

Couplet 35

35a. _____ (Bland and Jaques)

35b. _____ (Bland and Jaques)

Couplet 51

51a. _____ (Bland and Jaques)

51b. _____ (Bland and Jaques)

Activity 1- Examination of collection specimens

Representatives from these orders will be on display for you to examine. You should look at representatives of each group carefully enough to recognize diagnostic features. Note that representatives of several difficult fly families are on display in small boxes.

Activity 2- Family level identification of four insects

Keying four specimens- Complete an identification to family level for four insects. You can use insects from your collection, or insects on display from the SSU insect collection. Try to find insects that differ from each other in overall form. For each specimen, write down the list of key numbers that you used in the identification, the name of the family to which the specimen belongs. When you are finished, show your results to your instructor and verify your identification. Then write a brief description of members of that family, based on the description in Bland and Jaques (or another source if necessary).

Specimen 1- Order _____

Family _____ Source ____ my collection OR ____ SSU collection

Key couplets- _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,

Brief description

Specimen 2- Order _____

Family _____ Source ____ my collection OR ____ SSU collection

Key couplets- _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,

Brief description

Specimen 3- Order _____

Family _____ Source ____ my collection OR ____ SSU collection

Key couplets- _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,

Brief description

Specimen 4- Order _____

Family _____ Source ____ my collection OR ____ SSU collection

Key couplets- _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____,

Brief description