

Lab Exercise 11 - Fleas and Wasps

Introduction

In this laboratory, you will learn about representatives of the Siphonaptera and Hymenoptera. As a part of the laboratory, you will review three critical characters in the key to wasp families. As was the case last week, you will be able to use laboratory time for identification of specimens in your insect collection.

Order Siphonaptera: Adult fleas are bloodsucking ectoparasites, which feed on mammals and birds. Fleas are holometabolous. Adults have no wings, and lay eggs on or off the host. Larvae live in debris in host nests or near places where the host frequents. Most fleas that are found on humans or domestic animals belong to the family Pulicidae.

Order Hymenoptera: The Hymenoptera are holometabolous insects that have four wings with a relatively small number of veins (some species are wingless). Hind wings are loosely attached to front wings by a row of hooks on the anterior margin. Sex determination in the Hymenoptera is based on chromosome number, with diploid females and haploid males. Some species are parthenogenetic, others have evolved true sociality (with non-reproductive castes). Hymenopterans vary greatly in size (0.2-75 mm long).

- **Suborder Symphyta-** Abdomen broadly joined to thorax rather than stalked or constricted. Often lay eggs into host plants. Includes the saw flies (e.g. Tenthredinidae), which are gall makers or leaf miners. Some conspicuous tenthredinid leaf gallers (*Pontania*) and stem gallers (*Euura*) feed on willows.
- **Suborder Apocrita-** Most wasps belong to this group, which has a constricted abdomen and an ovipositor modified for stinging. Some parasitic wasps are characterized by relatively small size (Chalcidae, Pteromalidae). Bees collect nectar and pollen and feed it to their offspring (e.g. Apidae, Halictidae). Some wasps specialize on spiders as prey (Pompilidae), others prey on insects (e.g. Sphecidae). True sociality evolved among hornets and yellowjackets (Vespidae), bees, and in the ants (Formicidae).

Activity 1- Examination of critical key characters

To key wasps correctly using Bland and Jaques, you need to be able to distinguish characteristics shown in couplets 9 (trochanter number), 26 (pronotum morphology), and 33 (hind wing venation). 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 9

9a. *Hind leg with two trochanters between femur and coxa*

9b. *Hind leg with one trochanter*

Couplet 26

26a. Pronotum with a rounded lobe on each side, lobe does not reach the tegula; viewed from above, collarlike pronotum has a straight posterior margin.

26b. Pronotum without a rounded lobe on each side, pronotum sometimes reaching the tegula; viewed from above, posterior margin of pronotum curves forward.

Couplet 33

33a. Hind wing with a jugal lobe equal to or longer than submedian cell

33b. Hind wing with a jugal lobe shorter than submedian cell or absent

Activity 2- Family level identification of three insects

Keying three specimens- Complete an identification to family level for three insects. For each specimen, write the list of key numbers that you used in identification and the name of the family to which the specimen belongs. When finished, show your results to your instructor and verify your identification. Then write a brief description of members of that family.

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