

Lab Exercise 9- Beetles (Order Coleoptera)

Introduction

Beetles make up one of the most diverse groups of insects found, with more than 300,000 species. Beetles have thickened front wings that are called elytra. The elytra cover membranous rear wings. In most cases, they also cover the abdomen. When beetles fly, they raise their elytra to allow hind wings to move. A few beetles are wingless. Beetles have chewing mouthparts but vary greatly in their shape. Some have scissor-like mandibles to consume prey, others use them to grind plant tissue. Beetles vary greatly in size, shape, in body color and texture. Most beetles are plant feeders or scavengers. Beetles are holometabolous.

Insects will be on display for you to examine and compare with your own.

Activity 1- Examination of critical key characters

To key beetles correctly using Bland and Jaques, you need to be able to distinguish several critical characteristics that are described in couplets 3 (concerning the posterior margin of the abdominal sternite; distinguishes between suborders Adephaga and Polyphaga), 8 (concerning numbers of tarsal segments on front, middle, and hind legs), and 49 (whether the front coxal cavities are closed at their posterior). We have prepared several boxes with specimens that illustrate each characteristic. Examine the boxes carefully and write a brief description of the appearance of each form of the characteristic below (or draw the appearance of each version of the character).

Couplet 3

3a. Posterior margin of first abdominal sternite divided by hind coxae

3b. Posterior margin of first abdominal sternite NOT divided by hind coxae and extending across abdomen without interruption.

Couplet 8 (for this one, describe how you determined how to count tarsal segments

8a. Tarsal segmentation 5-5-5; 8b. Tarsal segmentation 5-5-4

Couplet 49

49a. *Front coxal cavities closed behind.*

49b. *Front coxal cavities open behind..*

Activity 2- Family level identification of four beetles

Keying four specimens- Complete identification to family level. You can use insects from your collection, or insects on display from the SSU insect collection. If you use SSU collection insects, one specimen will belong to the suborder Adephaga and three will belong to the Polyphaga. For each specimen, write down the list of key numbers that you used in identification, and 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, based on the description in Bland and Jacques (or another source).

Specimen 1

Family _____ Source ____ my collection OR ____ SSU collection

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

Brief description

Specimen 2

Family _____ Source ____ my collection OR ____ SSU collection

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

Brief description

Specimen 3

Family _____ Source ____ my collection OR ____ SSU collection

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

Brief description

Specimen 4

Family _____ Source ____ my collection OR ____ SSU collection

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

Brief description