# Using Dichotomous Keys to Identify Arachnids and Insects

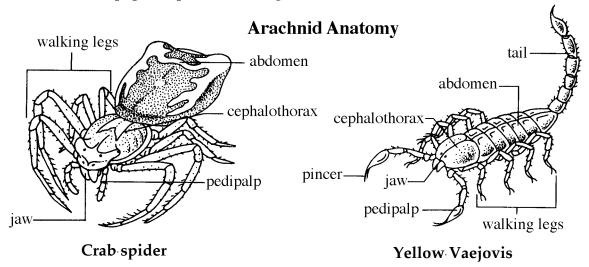
## **Background:**

One kind of arachnid, the wind scorpion, is so named because it seems to run as fast as the wind. The sea spider, another arachnid, lives on the ocean floor. The trapdoor spider digs o hole in the ground, covers it with a silk trapdoor, camouflages the trapdoor with leaves, and waits for its prey to walk across the trapdoor. When its prey passes above, the spider feels the vibrations and opens the trapdoor to make the capture. These arachnids are only three examples of the thousands of different types of arachnids. Arachnids, as well as other organisms, are often identified by their physical traits. A dichotomous key, based on visible physical traits, can help you identify members of a group of related organisms. Dichotomous means branching into two parts. As you use a dichotomous key, you read pairs of descriptions and decide which description of each pair is true about the organism you are identifying. In this laboratory you will use and make dichotomous keys for the identification of some arachnids and other arthropods. You still to include your own background on why insects are the most successful arthropod class.

## **Objectives:**

- Use a dichotomous key to identify types of arachnids.
- Construct a dichotomous key for the identification of some insects.
- Hypothesis none
- Variables none

Materials: Pen and paper. Optional: Field guide to arachnids and insects



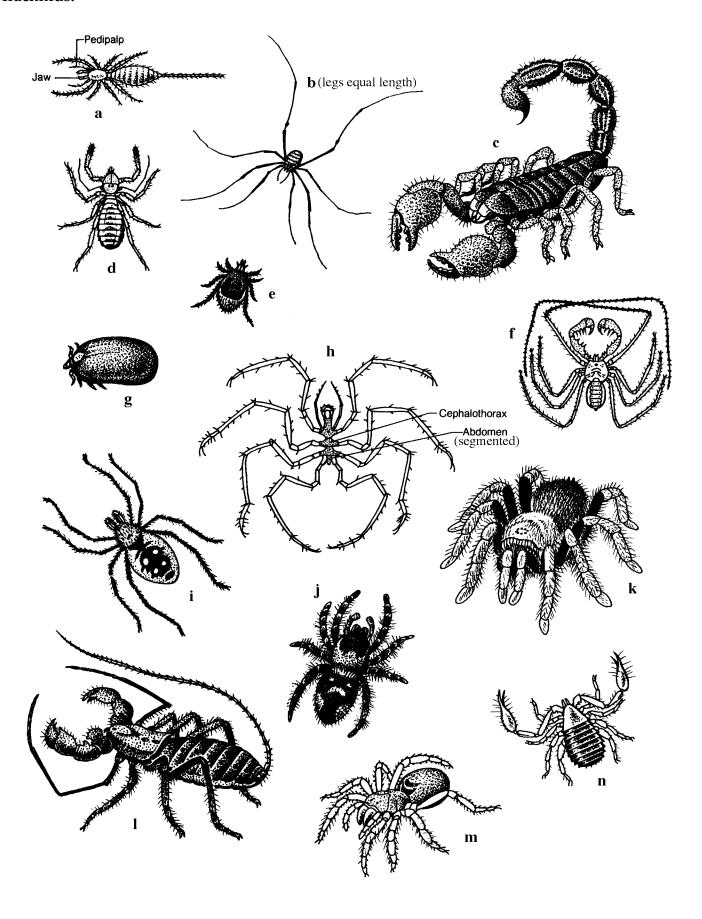
## Part A: Using A Dichotomous Key

- 1. Before you use the dichotomous key to identify the arachnids on the attached page, review arachnid anatomy by studying the diagrams above. In all arachnids the body is divided into two sections: the cephalothorax and the abdomen. Find the cephalothorax and the abdomen in each arachnid. Note how these body sections are joined. Observe whether the abdomen is segmented or lacks segments (example, "h" is segmented). All arachnids have six pairs of appendages: one pair of jaws, eight walking legs and two pedipalps.
- 2. Use the dichotomous key on the next page to identify each arachnid (a-n). Beginning with the first pair of statements, decide which statement is true for the arachnid. Proceed to the next pair of statements as directed by the key. When the key lists a name rather than a number of a statement pair, then you have identified the arachnid. Be sure to record each step of the key you used to identify the arachnid.

# Dichotomous Key:

Cephalothorax or abdomen segmented  b) Neither cephalothorax nor abdomen segmented	go to 2go to 9
2.a) Abdomen with tailb) Abdomen without tail	go to 3 go to 5
3.a) Thick tail with stinger at tipb) Slender tail without stinger at tip	Scorpion go to 4
4. a) Pincers on pedipalps; large arachnid	Microwhipscorpion
5.a) First leg long and whiplike	Whipspider go to 6
6.a) Abdomen much smaller than cephalothoraxb) Abdomen as large or larger than cephalothorax	Sea spider go to 7
7.a) Pedipalps longer than legsb) Pedipalps about the same size or shorter than legs	Pseudoscorpion go to 8
8.a) Legs long and stiltlike	Daddy long legs Wind scorpion
<ul> <li>8.a) Legs long and stiltlike</li></ul>	Wind scorpion go to 10
b) Legs not longer than body; pedipalps lack pincers	
<ul> <li>b) Legs not longer than body; pedipalps lack pincers</li> <li>9.a) No narrowing where cephalothorax and abdomen join</li> <li>b) Narrowing where cephalothorax and abdomen join</li> <li>10. a) Tiny and covered with spines</li> </ul>	
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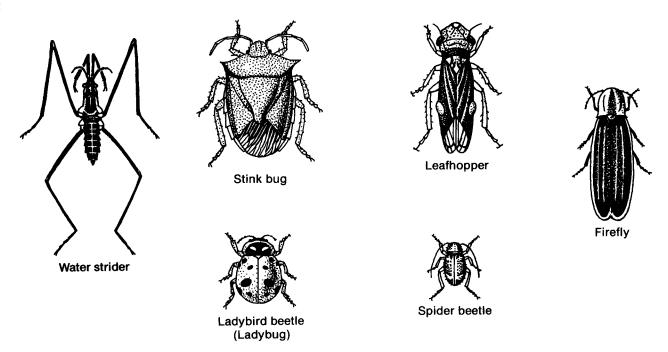
## Arachnids:



## Part B: Making a Dichotomous Key

Study the drawing of the insects below. On a separate piece of paper, construct a dichotomous key for the identification of the insects. Use the key from part A as a model. Use your textbook to identify the major anatomical features of an insect. **You cannot use more than two choices for every key step.** 

#### **Insects:**



### **Conclusion:**

- 1. Name three traits common to all arachnids and <u>recognizable</u> in the pictures of each arachnid.
- 2. State why behavioral traits, such as "preys on small insects" or "spins intricate web," would not be appropriate for many dichotomous keys? When might such a trait help you identify an organism? (2 pts)
- 3. How is "dichotomous" an appropriate word to describe the keys you used and constructed in this laboratory?
- Don't forget error analysis and suggestions