Investigate Using a Dichotomous Key

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Contents

Part 1: Using a Dichotomous Key for Insects

1. Go outside and find an insect (a bug with six legs and a segmented body). Gently trap the insect in a jar or other sealable container. **Be sure to wear gloves and use safety precautions for handling live animals.** *Do not trap a bug with more than six legs or one that looks like a worm.* If you prefer, take several photos of the insect from different angles instead of trapping it.

✓

2. Attach the best photo of your insect, or make a careful sketch of it, in the space provided under Data for Part 1. Below the picture, write a few sentences that describe the insect in detail.

✓

3. Click link #1 on the lab landing page to go to the website of the Insect Identification Key. On the page that appears, you will find a question about your insect. Read the tips above and below the question before you start using the key.

✓

4. Find the **Click one of the following:** heading, and reading the two possible answers to the questions (Yes,. . . and No,. . .) that follow. Decide which answer describes your insect, and start a list showing which answer you chose (e.g. Question 1: Yes) under Data for Part 1. Click on the correct answer for your insect. This will take you to a new page with a new question.

✓

5. Continue selecting the answer to the question on each new page until you reach a page that has no question. This page will show a picture of your insect, name the order it belongs to, and give its common name. The common name that follows the order to which your insect belongs.

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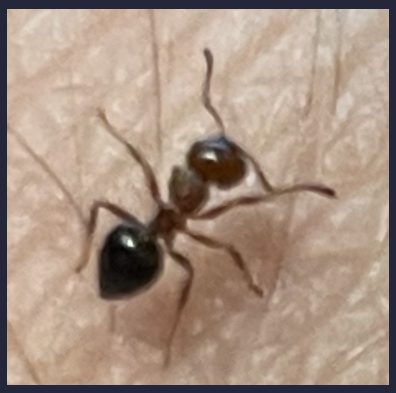
6. Record the name of the order our insect belongs to and its common name in the place provided under Data for Part 1. Then complete the list of answers you chose as you went through the key. Also list the characteristics that placed the isnect in the order you identified.

✓

Data for Part 1: Using a Dichotomous Key for Insects

- Photo or sketch of your insect:



- Detailed description of your insect:

  My insect has 3 segment and 6 legs. The 1st and 3rd segments are black and the middle segment is orange.

- Identity of your insect:

  My insect belongs in the order Hymenoptera and its common name is ant.

- List of answers chosen in the key:

  1. No, my insect does not have wings.
  2. Yes, my insect has antennae.
  3. No, my insect does not have a collophore.
  4. No, my insect does not have two or three long, tail-like appendages.
  5. No, my insect does not have a flattened body.
  6. Yes, my insect has an ant-like body.
  7. Yes, my insect has a narrow waist and elbowed antennae.

- What traits does the insect have that identify it as belonging to the chosen group?

  Traits that identify it as belonging to the chosen group are the ones I chose in the dichotomous key. This is because they meet the answers I used in the dichotomous key above, which is used to identify species based on certain traits. These choices are: not having wings, having antennae, not having a collophore, not having two/three long, tail-life appendages, not having a flattened body, having an ant-like body, and having a narrow waist and elbowed antennae.

Part 2: Using a Dichotomous Key for Trees

8. Go outside and find a tree with leaves. Pick one leaf from the tree. **Be sure to wear gloves and use the safety precautions for handling live plants.** If you prefer, take several photos of the leaf and the tree from different angles instead of picking a leaf.

✓

9. Attach the best photos of your leaf and tree, or make a careful sketch of each one, in the space provided under Data for Part 2. Below the pictures, write a few sentences that describe the leaf and the tree in detail.

✓

10. Click a link on the landing page to go to one of the following sources: "Trees of Texas" by the Texas A&M Forest Service, "Go Botany" by the New England Wild Flower Society, or Tree Identification Key (PDF). On the first page of an interactive key, you will find a menu of additional links. Determine which of these links best matches your leaf. Then click that link and compare your leaf with the new descriptions that appear.

✓

11. Continue through the key, comparing your leaf with each set of descriptions and making choices until you have identified the species of tree your leaf came from. Notice that the websites have turned a dichotomous key into a series of links that correspond to different descriptions. Thus, the interactive keys serve the same function as a traditional dichotomous key such as the Tree Identification Key (PDF).

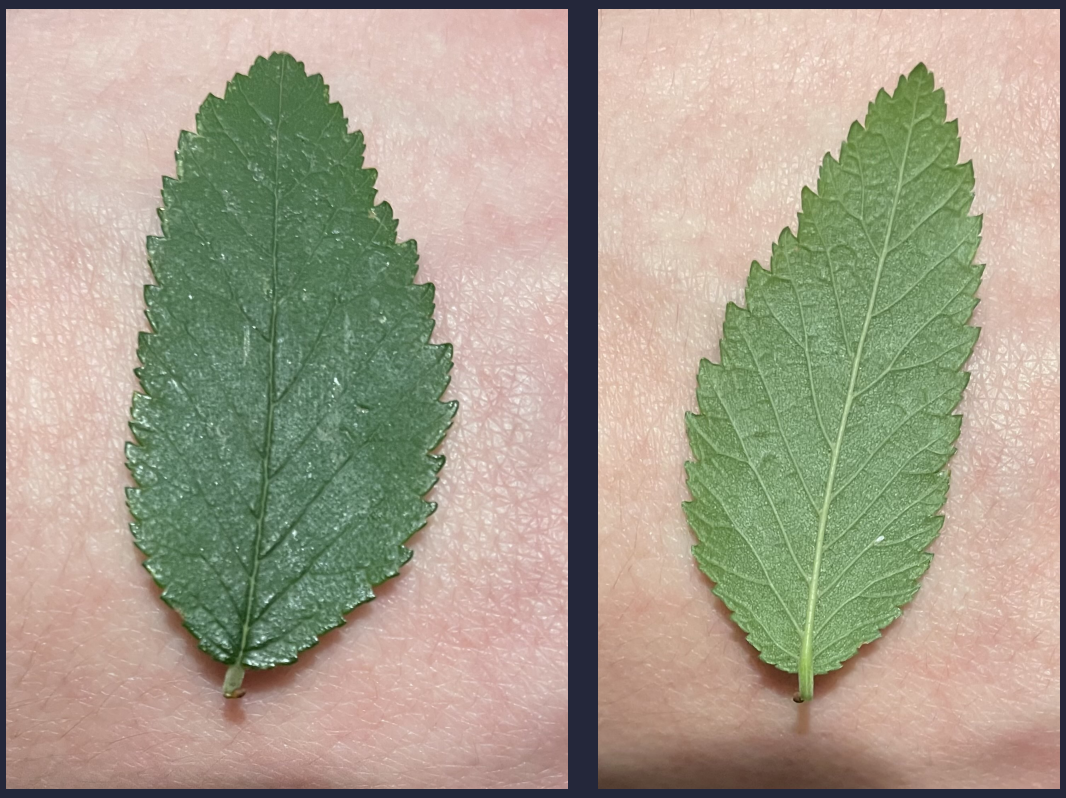
✓

12. Record the scientific name of your tree in the place provided under Data for Part 2. Then list the steps you chose as you went through the key, as well as the characteristics that placed the tree in the species you identified.

✓

Data for Part 2: Using a Dichotomous Key for Trees

- Photo or sketch of your leaf and tree:



- Describe your leaf and tree in detail.

  My leaf is an irregular ellipse with a dark green upper side and a light green lower side. My tree had a dark brown bark and short soft branches with many leaves.

- Identity of the tree your leaf came from:

  My leaf came from a tree in the species *Ulmus alata*.

- List of steps chosen in the key you used:

    1. Leaves are simple, alternately attached to twig
    2. Leaves oval, round, or elliptical
    3. Leaf edge double-toothed
    4. Leaf base rounded or wedge-shaped
    5. Leaves slightly hairy beneath; twigs “winged”

- What traits does the tree have that identify its species?

  Traits that the tree has that identify it as its species are the traits I chose in the dichotomous key above. These traits are: having simple, alternately attached leaves which are oval, double-toothed, hairy on the bottom, and have a rounded/wedge-shaped base.

Analyze Data and Draw Conclusions

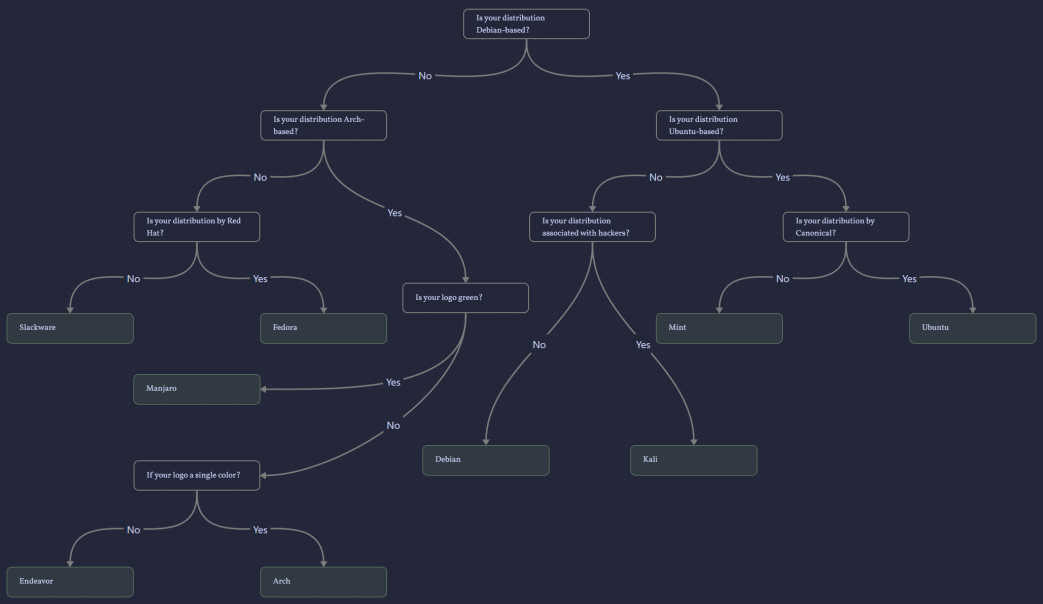
1. Was it easier to identify the insect or the leaf? Explain your answer.

   It was easier to identify the leaf because it was easier to inspect the leaf than the insect due to the leaf being larger than the insect.

2. Describe how biologists would use dichotomous keys while observing nature. How useful do you think they are?

   Biologists use dichotomous keys while observing nature by using them to identify unknown species quickly and easily. I think that dichotomous keys are extremely useful, not just for biologists/environmental scientists, but also for regular people. This is because to use a preexisting dichotomous keys, you don’t need to have an extensive knowledge of species and biology.

3. Select a topic, and make a dichotomous key of that topic. Select something with many parts that can be separated by characteristics (for example, superheroes, cars, clothes, sports, sports teams, ice cream flavors, etc.)



References

Insect identification key [Know your insects]. (n.d.). Retrieved June 13, 2024, from https://www.knowyourinsects.org/Step1a.html

Service, T. A. F. (n.d.). *Trees of texas* [Texas tree ID]. Retrieved June 14, 2024, from http://texastreeid.tamu.edu/content/idByLeaf/