

Part I: Dichotomous Key for Identifying Pine Trees

A dichotomous key is a tool that biologists use to identify organisms like trees, reptiles, and insects. A key consists of a series of choices that will eventually lead you to the name of the organism. This key is a “dichotomous” key because for each choice, you decide which of two options is the most appropriate (from *dicho-*, meaning ‘divided into two parts’).

Select your mystery organism and start with the first pair of options in the key. Decide which choice best describes your organism. At the end of that choice, you will either find directions about which pair to go to next or the name of the organism. (Warning: there is one extra plant in the key that you do not have. Be sure to read both choices thoroughly before you decide which fits your plant the best!)

- 1a. Plant has seeds in flowers/ fruits and has broad leaves.....Flowering plant
- b. Plant has seeds in cones and has needle-like leaves
 Conifer (cone bearing plant): go to 2

- 2a. Needles grow individually (not in a bundle) and directly from the branch
 *Sequoia sempervirens* (Redwood)
- b. Needles are arranged in a bundle.....Pine tree: go to 3

- 3a. (Usually) Three needles per bundle.....go to 4
- b. Not three needles per bundle.....go to 5

- 4a. Needles 14-25 cm long,.....go to 6
- b. Needles mostly less than 12cm long, with three needles per bundle
 *Pinus attenuata* (Knobcone pine)

- 5a. Needles are arranged in bundles of five, woody cone does not have a sharp “prickle”
 at the tip of each scales.....*Pinus hartwegii* (Hartweg’s pine)
- b. Needles are not in bundles of five.....go to 7

- 6a. Woody cone (=‘seed cone’*) is very large (> 18 cm long), needles are grayish-blue
 and clustered at the end of the branch..... *Pinus sabiniana* (Grey pine)
- b. Woody cone is 8-12cm long, needles are yellow-green, thin and hang down all along
 the branch.....*Pinus patula* (Mexican weeping pine)

- 7a. Needles are arranged in bundles of two, woody cone is <5cm and does not have a
 sharp “prickle” at the tip of each scale.....*Pinus edulis* (Colorado Pinyon pine)
- b. Needles are arranged in bundles of two, woody cone is >5cm and has a sharp
 “prickle” at the tip of some scales.....*Pinus muricata* (Bishop pine)

Part 2: Finding Out About Your Pine Trees

Now that you have identified all your pine trees, you can go to other sources and learn more about your plant. A very good source of information is a field guide. A field guide is a book that contains dichotomous keys, maps that show the distribution of organisms, and descriptions of the organisms. The descriptions of the organisms tell you where the organism lives, what it eats, what it looks like and whom it is related to.

There is a packet of photocopies from the field guide called *Trees and Shrubs of California*. Use the information in the field guide to answer the following questions.

1. The *range* of a species is the geographic area that the organism lives in. What is the range of Plant 6?
2. What kind of environment does Plant 6 live in?
3. Where would you find the tallest tree of Plant 4? How tall is it?
4. What kind of soil does Plant 4 usually grow in?
5. What is another common name for Plant 2?
6. What kind other kind of tree does Plant 2 grow with in the Sacramento and San Joaquin Valleys?

Answer Key:

#1 = *Pinus patula*—3 per bundle (Mexican weeping pine)\

#2= *Pinus sabiniana*—3 per bundles (Grey pine)

#3= *P. muricata*—2 per bundle (Bishop pine)

#4= *P. attenuata*—3 per bundle (knobcone pine)

#5= *P. hartwegii*-- 5 per bundle (Hartweg's pine)

#6= *Sequoia sempervirens* (Redwood)

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