## Taxonomy Name:

**Introduction**

Because the diversity of life on Earth is so vast, biologists use a general system of classification and naming organisms (taxonomy) to track and organize species based on evolutionary relatedness. The broadest taxon is the domain; organisms belong to one of the three domains (Bacteria, Archaea, and Eukarya). Within the domains are increasingly specific taxa, usually following the order in the table below.

The scientific name of an organism is given using binomial nomenclature; the genus and species of an organism give its specific scientific name. These names are usually derived from Greek or Latin, and therefore must be italicized when written. The genus is to be capitalized and the species is lower case. For example, the scientific name of a common wombat (top) is *Vombatus ursinus*.

Let us compare the wombat to a similar species, a quokka (bottom).

|  |  |  |
| --- | --- | --- |
|  | **Wombat** | **Quokka** |
| **Domain** | Eukarya | Eukarya |
| **Kingdom** | Animalia | Animalia |
| **Phylum** | Chordata | Chordata |
| **Class** | Mammalia (Marsupialia) | Mammalia (Marsupialia) |
| **Order** | Diprotodontia | Diprotodontia |
| **Family** | *Vombatidae* | *Macropodidae* |
| **Genus** | *Vombatus* | *Setonix* |
| **Species** | *ursinus* | *brachyurus* |

*"Vombatus ursinus -Maria Island National Park" by JJ Harrison (jjharrison89@facebook.com) - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons*



Note that both animals differ only when we reach the family level. If you knew that a kangaroo was in the same family as a quokka, would you assume the quokka was more closely related to a kangaroo or a wombat?

Scientific names might seem confusing, but are useful for several reasons. Common names tend to vary according to region (crawfish, crayfish, mudbug, crawdad), but the scientific name is always the same.

## Questions:

1. Llamas, alpacas, and camels are all in the same family*: Camelidae*.

*"Quokka” by the Hotel Rottnest, WA, Rottnest Island" by Vicsandtheworld - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons*

Therefore, it is reasonable to assume that these animals will also be in the same...

1. The scientific name of the brown-throated three-toed sloth is named *Bradypus variegatus*. What is the genus of the organism? The species?

## Part 1: A Simple Dichotomous Key

A dichotomous key is a tool used to determine the identity of species that have been previously described. You can think of it as a series of questions in which each question only has two possible answers.

In the table below, you have been given a list of creatures and their descriptions. The different characteristics, behaviors, and habitats of the creatures can be used in the dichotomous key to differentiate among them.

|  |  |
| --- | --- |
| **Creature** | **Description** |
| Jackelope | Mean-spirited horned jack rabbit |
| Chupacabra | Reptilian creature covered in scales with spines along the dorsal  ridge; likes to eat goats |
| Altamaha-ha | Water monster with an alligator-like head and long neck; lives in the  marshes of Coastal Georgia |
| Sasquatch | Stinky giant humanoid covered in brown fur; found in the forests of  North America |
| Yeti | Giant mountain humanoid covered in white fur; prefers the snow |
| Kraken | Giant octopus-like creature; takes down ships in the open ocean |
| Nessie | Water monster with a snake-like head and long neck; lives in Loch  Ness, in the Scottish highlands |

Below, you will find the dichotomous key used to identify a folkloric creature you may come across. On the left is the list of questions and on the right, the same list is represented as a flowchart. Both are useful representations of the same dichotomous key.

Does the creature live on land?

No

* 1. Does the creature live on land?
     1. Yes: go to question 2
     2. No: go to question 5
  2. Does the creature resemble a human?
     1. Yes: go to question 3
     2. No: go to question 4
  3. Does the creature have brown fur?



Yeti!

Does the creature have brown fur?

* + 1. Yes: Sasquatch!
    2. No: Yeti!
  1. Does the creature have scales?
     1. Yes: Chupacabra!
     2. No: Jackelope!

Sasquatch!

* 1. Does the creature have tentacles?
     1. Yes: Kraken!
     2. No: go to question 6

Yes No

Yes

Kraken!

Yes

Does the creature resemble a human?

Yes

Does the creature have tentacles?

No

* 1. Does the creature have a large head, resembling an alligator?



No

Does the creature have scales?

Yes

No

Chupacabra!

Jackelope!

* + 1. Yes: Altamaha-ha!
    2. No: Nessie!

## Using the dichotomous key, identify the creature at right.

No

*"Patterson–Gimlin film frame 352" by Patterson-Gimlin film. Via Wikipedia*

Yes

Altamaha-ha!

Nessie!

Does the creature have a large head, resembling an alligator?

## Part 2: Building a Dichotomous Key

In the table below, there are several different emojis. Your job is to build a dichotomous key that would help distinguish among them. There is space in the table to write out a description of each emoji, if necessary, as well as a name for each. Record your question series in the space below.

|  |  |  |
| --- | --- | --- |
| **Emoji** | **Description** | **Name** |
|  |  |  |
|  |  |  |
|  |  |  |
| C:\Users\Susan!\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\YG665I6F\tumblr_static_95p88l86si88ks4w4wws04wk8[1].png |  |  |
| C:\Users\Susan!\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\TPX33Z0N\emoji-frustrated[1].png |  |  |
| C:\Users\Susan!\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\YG665I6F\whatsapp-emotions-reais-6[1].png |  |  |

## Dichotomous Key Questions:

**b.**

**a.**

**1.**

**b.**

**a.**

**2.**

**b.**

**a.**

**3.**

**b.**

**a.**

**4.**

**b.**

**a.**

**5.**

**Part 3: Using a Dichotomous Key to Identify Trees**

In this section, a dichotomous key will be used to identify tree species based on samples provided by your instructor. Refer to the guide that follows should any terms about the characteristics used to distinguish among trees be unfamiliar.

## Materials

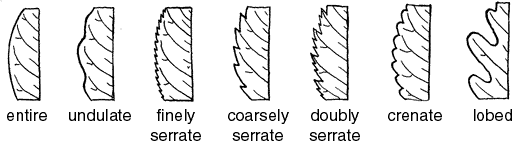
* Tree samples
* Dichotomous key

**Tree Characteristics**—**Terminology Guide** *(via Clemson Extension Office Bulletin 117)*

* **Petiole** — stalk of a leaf
* **Leaflet**—individual blade of a compound leaf
* **Apex** — the tip or distal end of a leaf
* **Sinus** — the space or indentation between the lobes of a leaf blade
* **Compound leaf** — a type of leaf that has three or more leaflets attached to a common stalk
  + **Palmately compound** — veins or lobes of a leaf radiating from a central point
  + **Pinnately compound** — arrangement of leaflets attached laterally along the middle of a compound leaf

## Leaf Arrangement

* + **Opposite** — leaves occurring in pairs at the nodes
  + **Alternate** — leaves arranged singly at intervals along the stems
* **Leaf Margins** (outer edge of a leaf blade)



## leaf_bases.gif (9192 bytes)Leaf Bases