

TAXONOMY AND DICHOTOMOUS KEYS

The science of naming organisms and placing them within appropriate groups is taxonomy or systematics. The names are always latinized and are recognized throughout the world as the standard “official” name for a given organism. This helps to prevent confusion because one type of organism may be known by several different common names. As an example consider the louse that can live on humans; it is also known as the cootie by some, but its scientific name is Pediculus humanus.

Because there are a huge number of organisms in the world (many have not even been identified) it is helpful to have a hierarchy of groupings, known collectively as taxons. The largest groups are domains. The domains are the Bacteria, the Archaea, and the Eukarya. These groupings are based on the vast differences in cell structure between the groups. Within the domains are kingdoms. In each of the Domains Bacteria and Archaea there is a single kingdom. However, in the Domain Eukarya there are four kingdoms: Protista, Fungi, Plantae, and Animalia. Each kingdom is divided into divisions or phyla (singular is phylum), depending on the kingdom. In this course we are primarily concerned with parts of the Kingdom Protista and all of the Kingdom Animalia (both of which are divided into phyla). The phyla are divided into classes; classes into orders; orders into families; families into genera (singular is genus) and genera into species. Realize that these groupings are not arbitrary – organisms are placed within a given group because they have certain characteristics in common with other members of the group.

A little more about species names. These names are actually designated with two names: the genus and species. This system is called binomial nomenclature; binomial because there are two names and nomenclature means to name. The species name is usually a descriptive term that modifies the genus name. For

example, the commercially raised chicken is classified as Gallus domesticus and it is believed to be descended from a species known as Gallus bankiva, the red jungle fowl. Commercial chickens are also related to Gallus sonnerati, the gray jungle fowl, Gallus lafayetti, the red and yellow jungle fowl and Gallus varius, the green jungle fowl. Notice that all five types of chickens are in the genus Gallus but we then became more specific with the species name. (As a short hand we could use the designation G. domesticus since we know we are concerned with chickens.) It should also be pointed out that the species name alone, in this case domesticus, is insignificant because house cats and dogs are also described as domesticated – Felis domesticus and Canis domesticus, respectively. In some instances a subspecies may exist based on the geographic distribution of the organism. Coturnix coturnix is the bobwhite quail, native to North America and its “cousin” the Japanese quail is Coturnix coturnix japonica.

It should also be pointed out that all taxon names are capitalized except the species and subspecies names and that the genus and species names are italicized or underlined.

Let us now look at the classification of the red squirrel:

Domain:	Eukarya
Kingdom:	Animalia
Phylum:	Chordata
Subphylum:	Vertebrata
Class:	Mammalia
Order:	Rodentia
Family:	Sciuridae
Genus:	<u>Tamiasciuris</u>
Species:	<u>Tamiasciuris hudsonicus</u>

This classification system has a number of implications. A very important one is that it allows us to see possible evolutionary relationships. If we compare the classification of