

What's in a name?

To the non-biologist, biological classification and nomenclature (our system of scientific names) may seem more like instruments of torture than valuable tools. For one thing, we insist on using hard-to-pronounce Latin names. The reason for that is easy to explain. When comparing information about organisms, scientists need to be sure they're talking about the same species. Unfortunately, even among people who speak the same language, common names are inconsistent and often misleading. For example, the species we call "elk" in the United States is called "red deer" in Europe. "Groundhog" and "woodchuck" refer to the same species. "Chipmunks" and "ground squirrels" may refer to the same or different species, depending on where you live. "Horned toads" are actually lizards, and they don't have horns.

You get the idea. By assigning every species a unique scientific name, we avoid that confusion. By rules that were established by Carolus Linnaeus in the mid 1700's, every species is assigned a unique name consisting of two words. The first is the name of the **genus** to which the species belongs. The second, the **specific epithet**, is usually descriptive in some way (it may describe the appearance of the organism or the place where it lives; sometimes the specific epithet is named for a person). The Latin is a historical artifact of the time when Latin was the universal language shared by scholars around the world.

This can certainly be confusing, but biologists who use a lot of scientific names usually learn to recognize the Latin (and sometimes Greek) roots of species names, which makes them easier to remember. Here's an example. Black-tailed prairie dogs are new popular pets. They are highly social animals with a characteristic anti-predator warning display called the "jump-yip". The scientific name for black-tailed prairie dogs is *Cynomys ludovicianus*. The genus name, *Cynomys*, comes from two words, "cyno", meaning dog, and "mys", meaning mouse. So prairie dogs are "mouse-dogs", named because their "jump-yip" calls reminded early explorers of dogs barking. "Ludovicianus" means "from Louisiana." The first prairie dogs described by European scientists in America came from Missouri in the 1800's, when Missouri was part of the Louisiana Purchase.

What about classification? What are all those kingdoms, orders, families, etc.? Classification is actually something we do unconsciously all the time – it's deeply

embedded in our language and culture and one of the many ways we organize information about our world.

A classification is just a system of information storage and retrieval. You may be somewhat familiar with the Dewey Decimal or Library of Congress classifications used in libraries. The numerical and letter codes on the books (the call numbers) contain information about the book's subject matter. Librarians and others familiar with the "rules" of the classification can therefore "retrieve" this information just by knowing a book's call number.

More familiar, though, are the many classification systems we use in our everyday lives. When Daphne tells Fred that she just bought a Ranger XL, he might not know what she was talking about. When she tells him she bought a pickup truck, he knows a lot about her new vehicle. That's because Daphne and Fred both know the "rules" of the classification system we use to store and retrieve information about motor vehicles. When Fred didn't know the characteristics of a specific kind of vehicle, Daphne told him the name of a larger category to which it belongs. Because Fred knows the characteristics of the larger category called "pickup trucks", he was able to retrieve that information and understand what Daphne was telling him.

Biological classification works exactly the same way. The "objects" we are classifying are biological species. The information we are storing and retrieving is information about evolutionary relationships, which are revealed through patterns of similarity (genetic, anatomical, behavioral, physiological, etc.) among organisms. We store and retrieve that information by grouping species into a system of nested categories very similar to the ones Linnaeus developed in the 1700's. The basic categories, from "highest" or most inclusive, to "lowest", or most distinct, are **Kingdom, Phylum (Division in plants), Class, Order, Family, Genus, Species**. Because species are grouped into higher categories based on their similarities and differences, a biologist who knows the "rules" (the kinds of characteristics used to identify each category) for a group of organisms can tell a lot about a species by knowing how it's classified, even if she has never seen or studied the species before.