Plant Taxonomy

What You've Always Wanted to Know (but Not Badly Enough to Ask)

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Plant taxonomy is the science of organizing plants into groups or categories and giving them names, based on agreed upon physical characteristics and more recently upon their DNA.

In his method of biological classification, Aristotle (384-322 BC), who focused on the animal kingdom, used the term génos to mean a kind, such as birds or snakes with similar characteristics. He used the term eidos to mean a specific form within a kind, such as hawk, parrot, duck. These terms were translated into Latin as "genus" and "species", but they do not correspond to the taxonomic method we use today.

The book of Genesis appears to use a similar method of classifying plants and animals: "God made the beasts of the earth after their kind, and the cattle after their kind, and everything that creeps on the ground after its kind." (Genesis 1:25 NASB)

Our current method of assigning names to various plants in a structured manner dates back to the 1700s when the scientist Linnaeus developed the more 6 precise method for identifying and classifying all living beings.

In our modern method birds are a class. Cardinals (Cardinalidae) are a family within that class (which also includes grosbeaks, tanagers and buntings), and the Northern cardinal is one of three species within a genus (Cardinalis)

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However, due to "shades of gray" among the species,per the Gesneriad Reference Web, there is still frequent disagreement and even conflict about wherea species should be placed categorically. And we are sometimes presented with changes based on what scientists believe from DNA testing to indicate closest kin--plants or animals evolved from a common ancestor. As one author said about the current taxonomic changes, don't get caught up in whether the recent change to the placement of Saintpaulia is correct; it's a moving target.

Under Linnaeus' system, each plant is given a name made up of two parts. First part is a genus (or generic) name based on patterns common to whole groups. (The plural of genus is genera.) The generic name is followed by a specific name (species name), sometimes referred to as an epithet. Those two names together are referred to as a binomial. A familiar example of a binomial is Episcia cupreata.

Binomial names must conform to certain grammatical rules. Generic and specific names are generally written in Latin or are Latinized words from other languages, often Greek. The generic name is alwayswritten first and starts with a capital letter. The species ame starts with a lower-case letter, even when derived from a proper noun such as the name of a person (patronym) or place, e.g., Achimenes mexicana.

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Both parts of the binomial are italicized or underlined if handwritten. After the full scientific name has been written once in a paper or body of work, it may be referred to by the first letter of the genus and the full species name: A. mexicana

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Species sometimes have a third part to their scientific name. This additional part identifies a newly discovered species' "describing author." The author's name is added in regular type after that individual has scientifically described the new plant in a journal. You may see the name abbreviated like this: Ramonda myconi (L.). "L." is the standard abbreviation used in botany for "Linnaeus."

There are hierarchical levels of classification called ranks above and below the genus and species. The grouping of several genera is called a family, which also share many characteristics in common. Episcia, Streptocarpus, Ramonda, and Achimenes are some of the 150 or so genera in the Gesneriad family. Family names start with a capital letter and generally end in "...ceae", such as Gesnericeae.

Further complicating our under-standing of the taxonomy of Gesneriads, the family has been divided into two major subfamilies: the subfamily Cyrtandroideae in the Old World and the subfamily Gesnerioideae of the New World.

The grouping above the level of family is called an order. Gesneriads are in the order Lamiales. The large order of Lamiales also includes the olive, mint, and verbena families.

The most important ranks of botanical taxa above order are: class, phylum, division, kingdom, domain and life.

(If you're still reading and you're still awake but yawning, you may want to skip or skim the next two paragraphs.)

As you've learned, taxonomy is subject to change, and you may be familiar with the fairly new concept of clades, a term sometimes now used to refer to the divisions, like branches and twigs, of the "tree of life." Clades are believed to include a common evolutionary ancestor and all the descendants (living and extinct) of
that ancestor.

Next, under this new system are phyla (previously called a division). The kingdom name, plantae, is near the top of the plant ladder but below the ranks of domain and life. (According to this three-domain system [archaea, bacteria, eukaryote], you share the same domain with slime mold, African violets, and blow flies. But that's another story for another time by another writer.)

(Awake readers, continue here.) There are a number of levels of classification on Linnaeus' system below that of species. The most common are subspecies and variety, abbreviated to 'subsp.' (in botany) or 'ssp.' (in zoology) and 'var.

A subspecies is capable of interbreeding with other genetically similar subspecies of the same species and producing fertile offspring. Subspecies are typically geographically isolated from other subspecies in that category. The first letter of a subspecies name should not be capitalized. An example is Saintpaulia ionantha subsp. grandifolia.

Simple English Wikipedia says a variety "is a plant that is different in some way, and continues to be different, from the rest of the species but is not different enough for it to be classified as a new species or as a sub-species." Example: Saintpaulia ionantha subsp. ionantha var. diplotricha.

Taxonomy can get even more detailed, but let's end our definitions with the familiar term, hybrid. A hybrid, or crossbreed, results when qualities of two different varieties, species, genera, or other crossbreeds are achieved naturally or with human intervention, resulting in sexual reproduction. A hybrid name is not talicized but is placed within single quote marks. An example we're all familiar with is Saintpaulia 'Buckeye Cranberry Sparkler.'

Whew! Aren't you glad there's no pop quiz on all of that?