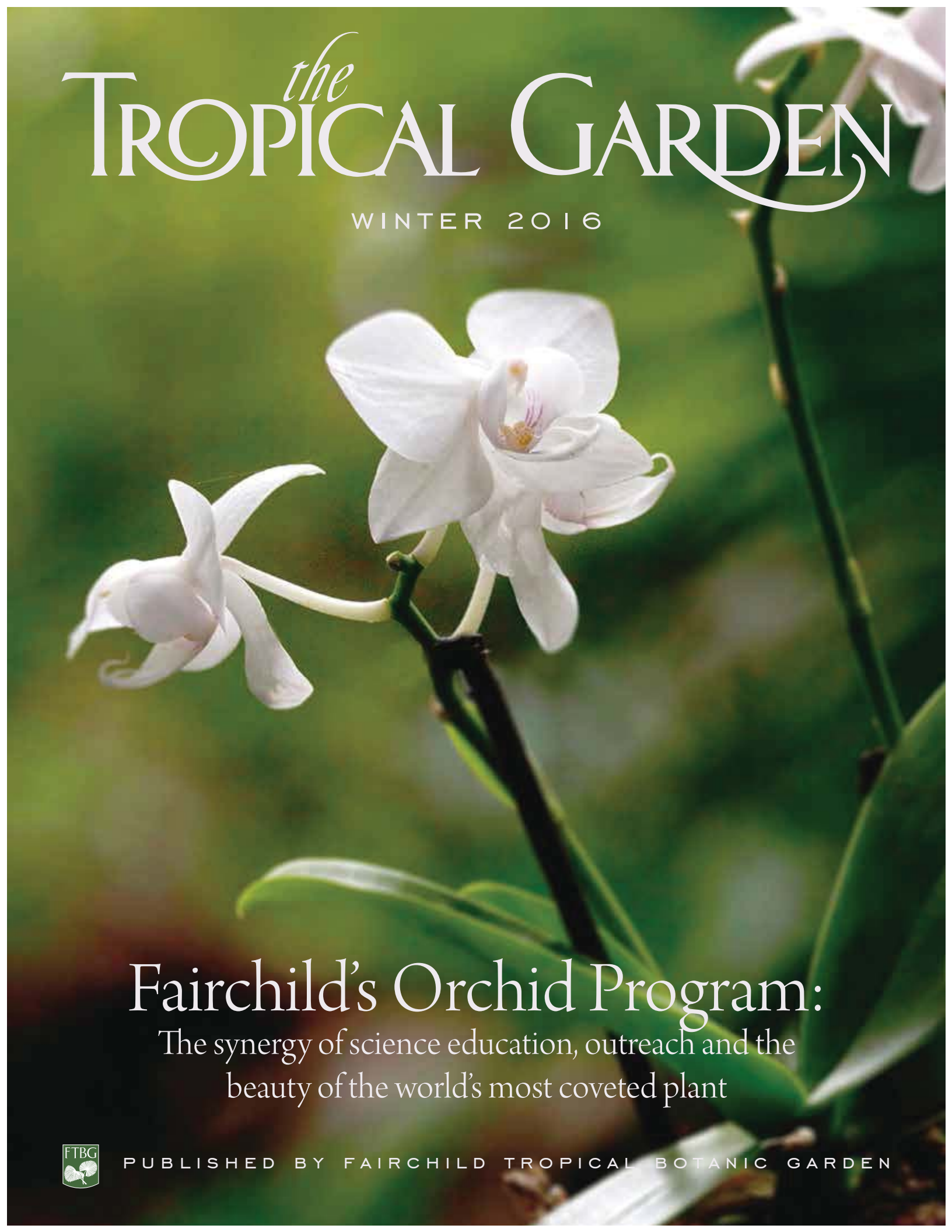
the TROPICAL GARDEN

WINTER 2016



Fairchild's Orchid Program:

The synergy of science education, outreach and the beauty of the world's most coveted plant

PUBLISHED BY FAIRCHILD TROPICAL BOTANIC GARDEN

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Cover

Phalaenopsis sp.
Come see this and many other beautiful orchids in our newest orchid exhibit: Orchid Odyssey in the Simons Rainforest.
Photo by Kenneth Setzer/FTBG

The Tropical Garden

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Nurture your budding botanist

You've avoided it long enough: plant taxonomy. But I promise, learning a little of the rationale behind scientific plant names will make you a better gardener and citizen scientist.

And it's fairly painless.

BY KENNETH SETZER

I've come to realize how much knowing a little about classification of plants and other organisms has helped me—inadvertently—understand more about how everything is related. This is, of course, one of its purposes—to reveal how closely living things are related to each other on the tree of life. But there are practical benefits to familiarizing yourself with those often-intimidating and hard-to-pronounce terms within botanical nomenclature.

Taxonomy sounds intimidating—classifying and consequently naming all living things appropriately is a major task, and one to which taxonomists devote careers and lifetimes—but it is worth investigating. For centuries, naturalists have tried to describe and name every living thing they possibly could. At one cumbersome point before the currently used system, a scientific name could essentially be one very long descriptive sentence in Latin. Worse, there were often multiple systems used simultaneously, so you couldn't even be sure naturalists were talking about the same thing.

You've probably heard of the Linnaean system of classification, Linnaeus being the 18th-century botanist who pulled together the system of binomial ("two name") descriptions we use today, for example the two words in *Homo sapiens*. Our modern classification system derives from many sources, with influences back to Aristotle, but Linnaeus's publication of "Systema Naturae" in 1735 is considered the foundation of modern taxonomy, and his later "Species Plantarum" applied the system extensively to plants. His biography is in itself pretty fascinating reading: A world traveler, physician, naturalist and botanist extraordinaire, Linnaeus's contemporaries often considered him arrogant and opportunistic, but even his adversaries acknowledged he had the brains and ability to back up his self-aggrandizing personality.

Diving into the Binomial System

The binomial is composed of the genus name (always capitalized and italicized) followed by the epithet (never capitalized, always italicized). Knowing these will take you a long way. For example if you know a plant is in the *Quercus* genus, you know it's an oak. If you know it's *Quercus virginiana*, you have a live oak. Two or more species that fall within the same genus are called congeners. It helps to know this, as quite often—but certainly not always—congeners have similar horticultural requirements.

What's great is *Quercus virginiana* means the same thing to everyone, regardless of their language or location.

The levels of description go much higher than genus and species. These levels are called ranks, and form what are known as taxa (singular taxon). Genus and species are taxa. Genera are gathered into families—which as we will see, is a most useful taxon.

It helps to think of taxa as populations of similar organisms, and as you go down the list, the groups get smaller and smaller. For example there are thousands of plants in the Fabaceae family (families are always capitalized, no italics), previously called Leguminosae. Informally, this is called the legume, pea or bean family. As you go from this family level down to, for example, *Senna* (a genus within the family) there will be far fewer members—250 to 350 depending on your source. Go down one more level to species, say to *Senna polyphylla*, and there is only one member, the desert cassia.

I find the family level most useful in gardening; it gives me a general "feel" for what a plant will grow to look like and what conditions it may need. If you know a plant is in the citrus family, Rutaceae, you know a lot. You may not get an edible citrus fruit from the plant, but there will be similarities. During the recent citrus psyllid problem, knowing the orange jasmine or orange jessamine (*Murraya paniculata*) is a Rutaceae member alerts you that this ornamental is susceptible to the same insect as an orange tree.

Not only will knowing plant families impress your friends, but you also won't be fooled by common names based on superficial appearances. You'll be able to tell people "that traveler palm (*Ravenala madagascariensis*) isn't a palm at all. It's in the Strelitziaceae family. Palms are all in the Arecaceae family."

There are, of course, many variations, disagreements, revisions and unknowns in taxonomy. Life is just too diverse and unwilling to be neatly classified to conveniently fit into our artificial categories. Ask what constitutes membership within a rank, and you may get many answers. While cladistics, DNA research and genome mapping have answered many questions, they've also raised many new ones. Many books and journals are published on this topic, so admittedly this article only serves as a very simple start. But knowing some basics helps us better communicate—and better care for and know our plants. Find out much more at the International Association for Plant Taxonomy: www.iapt-taxon.org.

There's a great mnemonic many biology students are familiar with: "**K**ing **D**avid **C**ried **O**ut **F**or **G**ood **S**oup." There are a dozen variations, but remembering this will help you keep the main ranks in proper descending order:

Desert cassia, *Senna polyphylla*

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae
Genus	*Senna*
Species	*S. polyphylla*

A note on pro-nun-cia-tion

Here are a few guidelines for starters, though there really is no universal standard:

- The plural of genus is genera, with stress placed on the first syllable and the first vowel pronounced as in "bet."
- Plant family names always end in –aceae, pronounced as "ay-see-ee." The aroid family Araceae is therefore pronounced "uh-ráy-see-ee."
- All botanical orders end in –ales.
- A vowel is generally long if followed by a single consonant, as in *Salix*, "say-lix," or *Bidens*, "buy-dens." With exceptions, a vowel is short if followed by two consonants, as in *Hosta*, "ha-sta," like the vowel in "hot."