

# THE BARNUM AND BAILEY® FREAK SHOW OF ORCHIDS

CAROL SIEGEL

WHEN MOST PEOPLE WAX POETIC about orchids they are usually talking about cattleyas, big gorgeous orchids like Mrs. Eisenhower wore at the inauguration, that women would carry in their bridal bouquets, that boys would give to girls at the prom. They are unbelievably beautiful flowers; they come in lovely colors; they have a delectable shape and luscious fragrance. When people talk about orchids, they are usually talking about Miss America, the most beautiful of the beautiful. However, just as most of us don't look like Miss America, most orchids don't look like cattleyas. With more than 25,000 orchid species, there are a fair amount that look more like Miss Toxic Waste Dump. She is not too pretty; she looks like she is not too familiar with a toothbrush, and she has some pimply thing going on for her. There are a lot of orchids that are not beautiful but are bizarre and odd and sometimes repulsive. Today, I am going to present to you the Barnum and Bailey® Freak Show of Orchids, the fatties, the uglies, the stinkers, and the weirdoes. Although these orchids are not show-stoppers, they are often the most fascinating and interesting orchids in the world.

There are orchids like *Epidendrum medusae* from Ecuador, which looks like the bearded lady at the circus. Some orchids don't look anything like orchids at all but look more like prehistoric birds like *Stanhopea wardii*. We can't blame Mother Nature for every hideous orchid. You may know the ugly *Albertson's Food* blue phalaenopsis and its cousin the *Smith's Food King* neon purple and green ones. These are very popular with the supermarket crowd. They add a few drops of food coloring and charge double the price, and they sell like crazy despite the fact that they look like they have been dipped in cyanide.

There are some bizarre orchids that you only get one time like a phalaenopsis that blooms with two lips and extra petals, a birth defect like Siamese twins. The oddest orchid I have ever seen is on the *Paphiness* website ([www.paphinessorchids.com](http://www.paphinessorchids.com)), a weird mutant slipper orchid that they owned. Produced by *Orchid Zone*, it looks photo-shopped although it is not. Terry Root, the former owner of *Orchid Zone*, crossed a green orchid with a burgundy orchid and weirdly got a slipper orchid with the colors exactly divided down the middle, green on one side and burgundy on the other. It reminds me of the *Star Trek* episode years ago when the last two people of the planet *Arianis* chased each other across the universe for 50,000 years because one was white on left side of his face and the other was white on the other side of his face, so naturally they had to try to kill each other. (Unfortunately, the orchid died, and we don't know if its progeny would have been as distinguished in coloration.)



*Epidendrum medusae*



*Stanhopea wardii*



*Mutant paphiopedilum*

## The Naked Man Orchid

A freaky orchid that people often think is merely a hoax is *Orchis italica*, the “Naked Man” orchid. It is what they used to call, when I was a little girl, an “anatomically correct” orchid, and some of them are even more hilariously anatomically correct than others. *Orchis italica* belongs to the genus *Orchis*, and not only does this species have flowers that look remarkably like little, naked men, but the genus has roots that look surprisingly like testicles. The name “orchid” itself means “testicle” in Latin and Greek, and the whole orchid family was named after this characteristic of the *Orchis* tubers. The *Orchis* plant dies back to the ground in the winter, and so they store food in the little tubers for next year’s growth. The tasty tubers are threatening *Orchis* orchids with extinction. Pedanius Dioscorides, in 50 AD, wrote a book called *De Materia Medica*, and he said that God wants us to use plants to cure our diseases but because we are none too bright, He made the plant look like the body part it was supposed to help. Because of what these tubers looked like, they were used as an aphrodisiac to cure impotence for thousands of years, a kind of ancient *Viagra*. Today, they grind these tubers with cream and sugar in the Middle East and Europe into an ice cream and a hot drink called “salep,” which is Turkish for “fox’s testicle.” The men line up outside salep stands because it is thought to have a very positive effect on the love life. The ice cream, also called “dondurma,” comes in 32 flavors, is served in ice cream cones but is weirdly elastic, doesn’t melt, and is eaten with a knife and fork. Unfortunately, this fascination with the aphrodisiac qualities of these orchids is resulting in the decimation of the orchids with tubers in Turkey. Just one ice cream manufacturer will kill 12 mil-

lion of these orchids a year, threatening these orchids with extinction.

Because of this ancient association with sex, orchids have always been considered impolite and rather fresh in Western culture. During the 17th century Golden Age of Dutch painting, many flowers were painted, but orchids were considered too racy to paint. In 1865, Edouard Manet displayed the picture “Olympia” at the Paris Salon, and it caused a scandal, and not because the reclining lady was nude. It was because she wore an orchid behind her ear, which meant she was a prostitute. Even in liberal France, in “Remembrance of Things Past,” Marcel Proust has a courtesan Odette have an intimate relationship with a man Swann, and they call what they do, “making cattleya.”

Orchids have quite a different reputation in the Eastern world. Confucius, in 500 B.C., said that orchids represented all that was best in the virtuous man. Any time you see an orchid in a painting from the Eastern world, they are trying to show refinement, integrity and humility, quite a different view.

## Orchids that Look Like Angels, Candy Corn or Dancing Ladies

Not all weird orchids look sexy. *Habenaria grandifloriformis*, the Angel Orchid, looks like a little angel hovering just five inches above the ground in monsoon season in India. *Bulbophyllum medusae*, widespread in Southeast Asia, Thailand, and the Philippines, has long white petals that are supposed to look like the snakes in the hair of the Gorgon Medusa. (The genus *Bulbophyllum* has more than 1500 species which include the smelliest, biggest, tiniest, and oddest in the world.) Some orchids are adorable like *Anguloa uniflora*, en-



*Orchis italica*



*Bulbophyllum medusae*



*Anguloa uniflora*





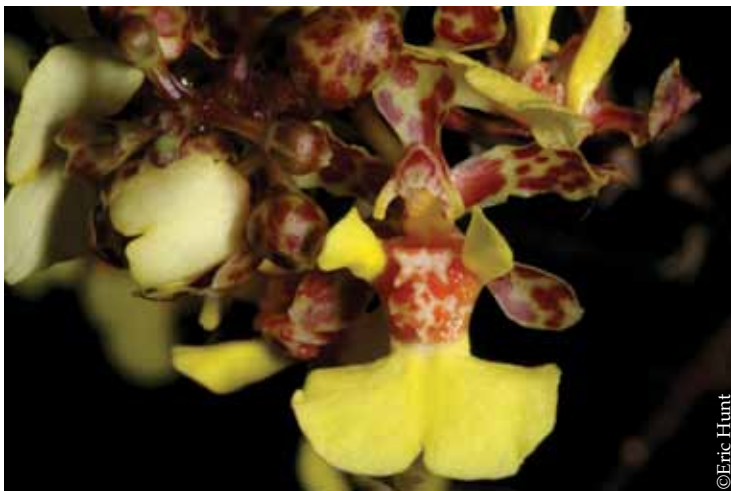
*Medicalcar decoratum*

demic to the Andes, whose fragrant flowers look like tiny babies nestled in a cradle. Leafless at the time of blooming, the lip is hinged so the pollinator is thrown against the column.

Other orchids don't look like orchids at all. *Medicalcar decoratum*, from New Guinea, looks like candy corn from Halloween. It is a tiny little orchid that grows along the ground in densely spreading mats of very un-orchid looking flowers. The yellow and orange terminal spikes emerge from ½ inch pseudobulbs.

There is the genus *Trichocentrum* that many of us grow that resemble dancing ladies. They look like they have little arms, a skirt, and a hat and sway in the wind on a long stem. The key to this orchid is not that it looks like a lady but that it grows in South America in places that are guarded by territorial *Centris* bees that fiercely defend their nectar sources. They think that the yellow, patterned orchid is an invading bee and attack the flower, trying to make it leave, which it, of course, cannot do. In the process, the bee unwittingly pollinates the orchid. Interestingly, it is thought that the pattern on the flower guides the attacker to exactly the right place for greatest pollination success.

Sometimes people see things in the middle of an orchid. Some phalaenopsis look like they have lions, tigers, and adorable baby birds in their lips. Not every orchid is adorable. Among the weirdest are some of the



*Trichocentrum ascendens*



*Dracula simia*

species of the genus *Dracula* from the high elevations of Peru and Ecuador. *Dracula simia* was named in 1978 for the fact that the flowers look monkey-like. Thankfully it doesn't smell anything like a monkey; it smells faintly like fresh oranges to some. There are many draculas that look like the cartoon character Curious George, but the key to these orchids is not that we humans think they look like monkeys but that their lips have an uncanny resemblance to mushrooms. Many of them smell like mushrooms, too. The mushroom is the flowering body of a fungus, and Van der Cingl (2001) references Vogel as saying that some draculas are pollinated by fungus gnats, which prefer to lay their eggs in mushrooms, hence the mushroom-looking lip. A recent study (Endara, 2010) points to drosophilid flies in the genus *Zygothrica* as pollinators of two species of *Dracula* in Ecuador. These flies like to rendezvous and mate in mushrooms but do not lay their eggs there. In the course of mating, they pollinate the orchids.

## Orchids that Look Like Sexually-Receptive Females

Not only New Guinea has strange orchids, but Australia has many of the oddest orchids in the world. It has been separated from Antarctica for millions of years and has developed many deceptive orchids that try to





*Caleana major*

fool pollinators by looking like something else. *Caleana major*, the Large Flying Duck Orchid, has a flower that looks just like a duck. Its pollinator, a sawfly, sees the moving lip of the flower not as the beak of a duck but rather as the back end of a willing female sawfly, down to the enticing smell, and mounts the movable lip in an attempt to copulate with what it thinks is a lady insect. The hinged lip traps the pollinator, which sadly gets only a dummy female and not much else. It is "pseudocopulation" for the sawfly, but it is real for the orchid that gets pollinated.

There are a lot of orchids which also unbelievably look like willing female insects with the correct look and turn-on scent to lure an insect to try to mate with it. *Ophrys insectifera*, the Fly Orchid, smells and looks so much like a willing female digger wasp that not one, not two but three male digger wasps may attempt to copulate with the flower, and in the excitement, with each other. "Ophrys" means "eyebrow" and these orchids are hairy like a real female wasp. *Ophrys bombyliflora* looks just like a female bumblebee, down to the ridge in its lip which mimics the ridge around the genitals of the insect. *Ophrys speculum* looks like a receptive virgin female bee with her head stuck in the flower and her furry bottom poking alluringly out. The iridescent blue on the lip looks like the female's wings to complete the illusion.

In the spring, a line of male bees emerges from the ground, two weeks before the females. The orchids are in bloom, waiting for the excited male bees. The deceptive orchids look pretty good. They smell even better, and best of all, to an inexperienced male, they don't fly away. They are easy! So he mounts the orchid, but he gets nothing out of it, and he flies away, picking up a pollinia. Because he is not Einstein, he falls for the trick again, depositing the pollinia and pollinating the orchid. The fragrance is so powerful that you can put



*Ophrys bombyliflora*

it on the head of a pin, and, in the absence of any other stimuli, a wasp will copulate with the head of the pin.

*Ophrys scolopax* not only looks like a female bee but also looks amazingly like Bozo the Clown or Shrek.

There are beautiful, unusual orchids that look like birds in flight. *Pecteilis* (formerly *Habenaria*) *radiata*, an



*Ophrys scolopax*



*Pecteilis radiata*

over-collected terrestrial beauty from China, Japan, Korea, and Russia, has delicate flowers that look amazingly like magnificent white egrets in flight. The Dove Orchid, *Peristeria elata*, is the national flower of Panama. "Peristerion" means "from the dove, and its wing-like lip lobes conjure up a beautiful white dove nestled in the folds of its waxy flowers. It is also called, "Espiritu Santu," the Holy Ghost, which is said to appear as a dove. Unusual, too, are the enormous pseudobulbs of this orchid that are the size of a baby's head. *Peristeria elata* was one of the first five species listed on a CITES protection list.



*Peristeria elata*

## Orchids that Are Massive, Giant, or Midgets

Not only are some orchids distinguished by the odd things they resemble, but some are distinguished by their peculiar size. Some are very massive, some very tall, and some are adorably tiny. Among the most enormous orchids in the world is *Grammatophyllum speciosum* from Asia. The flower spike alone can be taller than the tallest man, and its pseudobulbs can be as much as eight to ten feet tall. Thirty to fifty flowers can be borne on a four to ten-foot spike. One of the largest ones recorded weighed more than 4000 pounds. Men collecting these plants, which weigh as much as a bull elephant, have been killed when one of these orchid plants has fallen on them. One of these housed in the Brooklyn Botanical Gardens was 12 feet wide, weighed 300 lbs., and had 17 spikes.

*Grammatophyllum pantherinum*, another massive orchid of the same genus, can weigh a ton. Its massive ball of roots, known as "trash basket roots," can house a colony of ants that protects it from herbivore predators in exchange for getting a home. In South America, plants of a similar genus, the genus *Cyrtopodium*, can also reach enormous sizes. Their seed pods can contain 7 ½ million seeds, and their pseudobulbs can grow to 18-36 inches tall.

A perennial favorite at orchid shows, *Dendrobium speciosum*, found from New Guinea to Eastern and Southeastern Australia, comes in several forms, some of which can grow to be massive plants, up to 18 feet high. It needs cool to warm conditions, and a drier winter rest with no water or fertilizer.

The tallest orchid in the world, from Peru, is thought to be *Sobralia altissima*, which can grow to 41 feet (13.5 meters) tall, the height of a four-story building. *Selenipedium chica* used to be considered the tallest orchid, but it only grows to 16.5 feet tall. Found in Panama, Ecuador, and Northern Peru, it has lovely flowers that look like little toilet bowls.

Some orchids don't have enormous plants but have enormous flowers. The most famous of these is *Phrag-*



*Dendrobium speciosum*



*mipedium kovachii* that in 2003 was illegally introduced from Peru to the orchid world. It is thought to be the most important orchid discovery in the last 100 years. The buds are hairy and coppery; the flowers are deep magenta and seven inches across. If you hold the flower, it covers both your hands.

Then, there are some orchids that are incredibly tiny. Tiny flowers usually have tiny pollinators, little flies and mosquitoes and midges. They have to be so small to allow these insects to be effective pollinators.

Some of the world's tiniest orchids are found in the genus *Platystele*, appropriately named things like *Pls. microscopica*, *Pls. minimiflora* and *Pls. microglossa*. *Platystele jungermannioides* was known as the world's smallest orchid flower (flower 0.1 inch [2.5 mm] until Lou Jost found a smaller *Platystele* in 2009 in Ecuador); he found it by accident in the root mass of a larger plant. The flowers are only 2 mm across (less than 1/10 inch) and the petals are just one cell layer thick.

The smallest bulbophyllum, from Australia, is *Bulbophyllum minutissimum* with a pseudobulb about the size of a match head. Its leaves are only 1mm long (1/25"), like tiny little scales, which cannot do effective photosynthesis. The minute pseudobulbs have a tiny hole in them lined with stomata. The air goes in through the tiny opening, and the pseudobulbs do photosynthesis for the little plant.

*Lepanthes*, a member of the subtribe *Pleurothallidinae*, is a genus with approximately 1111 species. The many tiny, magnificent beauties are best seen with a hand lens. I have seen a picture of a whole bouquet of lepanthes sitting inside a wedding band. A flower of *Lepanthes woodburyana*, from Puerto Rico, would cover just a fraction of a thumb nail.

Other *Pleurothallidinae* can also be tiny like *Specklinia* (formerly *Pleurothallis*) *grobyi* that looks like little origami birds nestled in the foliage. *Stelis* (formerly *Pleurothallis*) *ornata* is just 1/4" wide with a white fringe that is only 1/32" long. The orchid attracts tiny little flies that lay their eggs in the flower. The spots on the flowers look like tiny little flies, and the fringe looks like hanging maggots or larval flies. The fly thinks that this must be a good place to lay eggs, and in the course of the visit to the flower, pollinates the orchid. This is not just a flower; it is a magnificent and intricate piece of tiny floral machinery, exquisitely designed to result in pollination. The nice thing about having a collection of tiny orchids is that, in the space needed for one cattleya, you can raise 100 magnificent and interesting little orchid treasures.

## Orchids that Stink

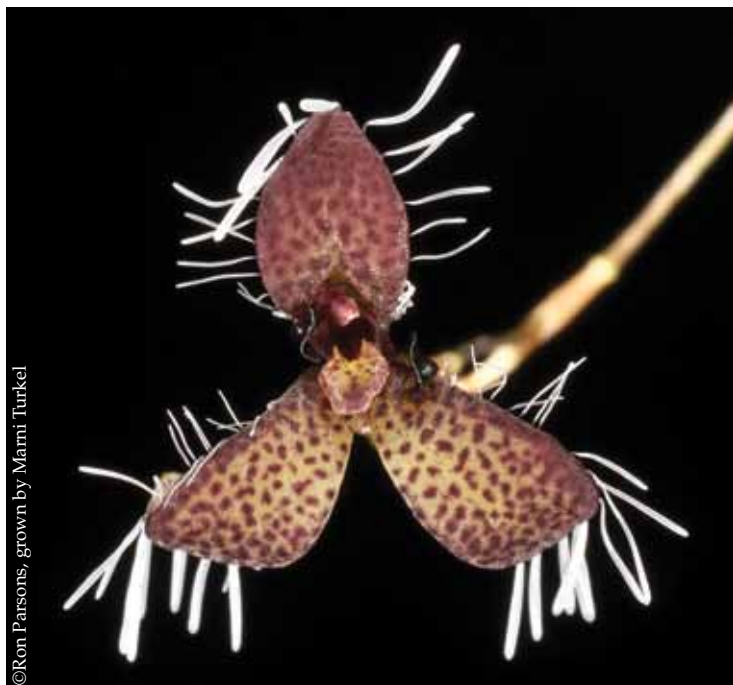
There are some orchids that are big, and some that are small, but there are also some that really stink. *Bulbophyllum fletcherianum* is pollinated by carrion flies, and when it is in bloom, it smells like a herd of dead elephants. You can buy it on eBay for as little as US\$35, but nowhere do they tell you that this not a house plant.



*Phragmipedium kovachii*



*Platystele ovatilabia*



*Stelis ornata*



*Bulbophyllum fletcherianum*



*Bulbophyllum phalaenopsis*

They call it the Tongue Orchid because its flowers look like big red tongues sitting on seven-foot leaves. From New Guinea, the seed pod is the size of a hand grenade, and each one has a cup of orange-yellow seed.

With leaves five feet long, *Bulbophyllum phalaenopsis* is a true stinker. Pollinated by carrion flies, its flowers look and smell like rotten liver. *Bulbophyllum beccarii*, found in New Guinea and one of the largest of the bulbophyllum, has leaves that can be six feet long. Its



*Bulbophyllum echinolabium*



*Maxillaria pulla*

flowers are said to smell like rotting Borneo pygmy elephant, which I suspect is not a good thing. It has been called the worst smelling flower in the world, a dubious distinction. *Bulbophyllum echinolabium*, from Sulawesi, attracts flies with a fragrance that to many best resembles the odor from the toilet in the boys' bathroom. Fortunately, it smells most when the flower first opens, and the beautiful successively-opening flowers compensate for the relatively brief urine smell.





©Ron Parsons, grown by John Leathers

*Specklinia endotrachys*



©Ron Parsons, grown by Golden Gate Orchids

*Maxillariella tenuifolia* 'OM'

If that isn't bad enough, there are lots more. There are some orchids that stink like a goat: *Himantoglossum hircinum* has an awful smell. "Himantoglossum" means "strap tongue," the shape of its lip, and "hircinum" means "stinks like a goat." It is also called the Lizard's Tongue Orchid because it also looks like lizards' tongues sticking out of the flowers. You would never know from looking at the lovely flowers that they had such a terrible smell. Not to be outdone, *Maxillaria pulla* smells like a wet dog. Even worse, *Masdevallia caesia*, a pendant orchid from Colombia, smells like Limburger cheese.

Some orchids have distinctive smells that are more pleasant. *Specklinia* (formerly *Pleurothallis*) *endotrachys*, pollinated by a fruit fly, smells like ripe fruit. *Maxillariella tenuifolia*, the Coconut Orchid, smells like coconut, and *Masdevallia glandulosa* smells like cloves.

## Orchids that Look Like Mushrooms

There are strange orchids that smell like mushrooms and look like them too. Fungus gnats like to lay their eggs in mushrooms, so looking and smelling like a mushroom will attract this pollinator. From Australia, *Corybas diemenicus*, looks like the fruiting bodies (the mushrooms), of basidiomycetes, a type of fungus. A group of them resemble nothing more than mushrooms



©Ron Parsons, grown by Hanging Gardens

*Corybas diemenicus*





*Dracula vampira*

growing in rotting leaf litter on the forest floor. It is a bizarre illusion. Another weird one, *Dracula vampira*, has a lip that looks like a mushroom and smells like one, too.

One of the strangest orchids is *Cypripedium fargesii*, from China, whose leaves look like they are infected with *Cladosporium* fungus to attract flat-footed flies that like to drink up the wet parts of leaves infected with this fungus. It is one of approximately five closely-related *Cypripedium* species in China which look like their leaves are infected with fungus.

## Orchids Are Threatened by the Impact of Aids

Nobody would think that AIDS would threaten orchids. There are twelve million African AIDS orphans who live in poverty. Sometimes, a grandmother will be



*Cypripedium fargesii*

raising 25 grandchildren orphaned by AIDS. There is no money for farming, they are young, and she is old and they turn to gathering orchids in the wild for the tubers that are ground up with peanuts to make a very popular Zambian dish called "chikanda." It is the IT food, a loaf that is served in the trendiest restaurant with garlic sauce or in sandwiches. An orphan can earn seven times as much from making a loaf of chikanda as from making a loaf of bread. They can earn seven times as much by selling an orchid tuber as by selling a potato. Because the children don't have parents to teach which orchids to pull out of the ground, half of what they collect cannot be sold. Their poverty, their inexperience, and the enormous demand for the orchid tubers, has wiped out all these orchids in Zambia and now they are illegally importing the orchids from Tanzania. No one would deny a living to orphans, but this unsustainable practice will very shortly leave them with nothing. Like everything associated with orchids, it is a complicated thing.

## Orchids that Grow in Water or Look Like Slime Mold

There are other bizarre orchids that surprise and delight us. *Habenaria repens*, the Water Spider Orchid or the Floating Orchid from Central and Southeast United States to Tropical America, grows as a terrestrial in standing water in bogs, roadside ditches, canals, and marshy areas and can float in mats of vegetation in bogs. Botanists have found that the plant manufactures a protective chemical, habenariol, that deters feeding by freshwater crayfish.

Discovered in 2011 in a forest earmarked for destruction in Papua, New Guinea, *Bulbophyllum nocturnum* is unusual for two reasons. First, it is the first known orchid with flowers that consistently open at night and close during the day. It has gray appendages that hang from the middle of the flower that are variously interpreted to look like small sausages, hairy spider legs, tiny heart shaped balloons, or minute fungi. These appendages often cause the flowers to resemble small animals, and this has made some botanists speculate that they are pollinated by insects looking for a mate or prey. Other scientists consider these appendages to mimic the fruiting bodies of slime mold and think that the pollinators are probably tiny fungus gnats.

## Unusual Orchids

Other orchids have strange or even missing parts. *Paphiopedilum sanderianum* from Borneo, discovered by F. Sander's collector J. Foerstermann in 1885, has wild-looking very long petals that can measure over one meter long.

There are orchids that have very bizarre lips like in the genus *Coryanthes*, commonly known as the bucket or helmet orchid. They have a lip that looks like a bucket or swimming pool filled with liquid dripping from



*Paphiopedilum sanderianum*

the side of the column topped by a helmet covered with slippery, fragrant waxes. Euglossine male bees collect these waxes with their feet to make an aphrodisiac to attract their females, get drunk, and slip into the wet bucket, escaping by climbing a ladder of hairs in the back of the flower; exiting, they pick up and deposit pollinia.

Also, some orchids have different forms for different sexes. Most orchids are “perfect,” meaning they have male and female parts in the same orchid. A few orchids are different in that they have separate male and female flowers that look different as in the genus *Catasetum*. The male flowers are more interesting and are produced more freely than the female ones. The male



*Coryanthes misasii*

flowers have antennae that act as a trigger. A pollinator landing near the antennae will cause the pollinia to shoot out at the speed of a bullet, sticking to the hapless intruder. The female flowers look more like a hood and are formed in ideal growing conditions. When conditions are not perfect, the plant does not waste resources on “expensive” female flowers. Another oddity, *Dimorphorchis lowii* from Borneo has yellow female flowers and red male flowers. The female ones are at the top of



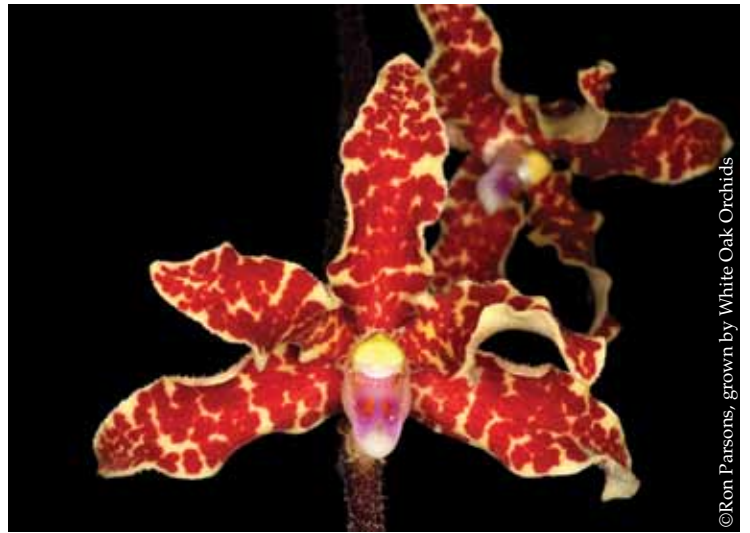
*Catasetum juruenense*: female flower on right





©Ron Parsons, grown by White Oak Orchids

*Dimorphorchis lowii* with yellow female flowers



©Ron Parsons, grown by White Oak Orchids

*Dimorphorchis lowii* with red male flowers

the spike, and the males are lower down.

Some orchids are unusual in that they have their flowers modified into long nectaries filled with nectar for their pollinators. The angraecoid orchids from tropical Africa and Madagascar comprise hundreds of species modified to attract moths with stiff, white flowers that are night-fragrant and with very long nectaries. Darwin wrote that there must be a moth with a 14-inch tongue to pollinate one of these orchids, *Angraecum sesquipedale*. He was the laughing stock of England until they found that moth, *Xanthopan morgani* *predicta*, forty years later.



©Ron Parsons, grown by Mary Gerritsen

*Dendrophylax funalis*



©Eric Hunt

*Dendrophylax lindenii* (The Ghost Orchid)

## Orchids without Leaves

There are hundreds of orchids that are weird in that they have no leaves or rather leaves modified into tiny bracts. *Dendrophylax funalis* is just a mass of roots that does the photosynthesis for the plant. There are no visible leaves. Leaves are very expensive for the plant to produce and maintain regarding water. If you can get rid of your leaves, it is very economical for the plant. The most famous leafless orchid in the world is *Dendrophylax lindenii* (the Ghost Orchid), the subject of the book *Orchid Thief* and the movie with Nicholas Cage, *Adaptation*. John Laroche, twenty years ago, illegally gathered these orchids from the Fakahatchee Strand State Preserve in Florida. Susan Orleans wrote about his arrest and trial. Most of the time, the orchid is just a wheel of green roots, but when the conditions are right, a gorgeous, big, fragrant flower, looking like a big white frog, jumps eerily out of the roots. In Madagascar, *Microcoelia gilpiniae* is another leafless orchid that is also just a big ball of orchid roots, but when it blooms in the spring and summer, it has gorgeous orange flowers.



©Ron Parsons, grown by Cindy Hill

*Microcoelia gilpinae*

## Orchids without Leaves or Roots

If that weren't strange enough, there are orchids that not only have no leaves—but they also have no roots. One of these orchids, *Corallorhiza mertensiana*, called the Merten's Coral Root, has a rhizome that looks like a piece of coral but has no roots, despite its name. It receives its nutrition from the ectomycorrhizal fungi, and the fungi obtain their nutrients from the trees surrounding the orchids. The plant is a bum and lives completely on handouts from its resident fungi. Lacking both roots and leaves, it cannot take up water or make food to use. The orchid has managed to get a fungus to grow inside the rhizome. The orchid extracts sugar from the fungus which acquires carbon from the trees. They are epiparasites, parasites on parasites, and are entirely dependent on the fungal pipeline. Nobody knows how these dependent orchids (myco-heterotrophic orchids or MCH) manage repeatedly to attract fungi, but it is a significant advantage to the orchid. It has been shown that orchid genetic differences at the level of sibling species simultaneously control the acceptance and exclusion of closely related fungi. In one square yard of dirt, there can be 12,000 miles of fungal threads (hyphae or mycelia). Each thread is 1/60th of the size of an orchid root. By relying on fungi, orchids can penetrate into places and feed on things they could never do on their own without going to the trouble of making their roots.

*Epipactis microphylla* also relies on a fungus to make a living. The fungus it relies on is the truffle, and truffle hunters know that if you find this orchid, you will be able to find truffles. There are several orchids that grow with truffles.

*Rhizanthella gardneri* is another orchid with neither roots nor leaves. From Western Australia, it bizarrely spends its whole life underground, barely breaking the ground to bloom, thought to be pollinated by termites and gnats. Discovered in 1928 by the farmer John Trott as he was clearing a field of broom honey myrtle (*Melaleuca uncinata*), the orchid grows within eight feet of this shrubby tree. The orchid, the tree, and the fungus form a three-way relationship. Fungal threads infect the

hairy orchid rhizome, and the other ends wrap around the roots of the tree and shuttles nutrients. Endangered, *Rhizanthella slateri*, from Eastern Australia, is another rare underground orchid, growing in conjunction with fungi and specifically, eucalyptus trees.

## Orchids that Love Ants

Some orchids are unusual and odd because they form a relationship with ants. *Leporella fimbriata* is the only orchid in the world that is pollinated by a winged male ant that attempts to copulate with the flower. Its lip supposedly smells like a virgin queen ant.

Another genus of orchids that is intimately associated with ants is *Myrmecophila*, which have hollow pseudobulbs; they were formerly part of the genus *Schomburgkia* which is no longer accepted as a genus. Orchids from *Myrmecophila* which do not have hollow pseudobulbs have been moved to the genus *Laelia*. Pseudobulbs of *Myrmecophila* have a slit through which a mated queen ant enters and lays her eggs in the hollow pseudobulb, establishing her colony. The home is called a "domatia," and the ants will protect the *Myrmecophilas* in exchange for food and shelter. The orchid gives it nectar, and the ant is the bodyguard for



©Ron Parsons

*Corallorhiza mertensiana*





*Myrmecophila tibicinis*

the orchid, preventing herbivore attack. The ants have been known to attack horses, rhinoceros, giraffes, and bite humans. The ants also pack the pseudobulbs with dead ants, parts of their meals, and poop, and radioactive studies have shown the orchid can access the nutrition from the domatia.

Moreover, there are also many orchids with "trash basket" roots that house ants in their roots like *Gongora*, *Grammatophyllum*, *Vanda*, *Cattleya*, *Dendrobium*, *Coryanthes*, and others. The tangled mound of exposed roots can be five feet wide, and ants will vigorously defend their home. Although *Coryanthes* can grow without ants in cultivation, it is said that in the wild they cannot survive without their ant association.

Orchids are a bizarre and fascinating lot. We have seen that there are some orchids that are not pretty and some that look like naked men. We have seen orchids with weird colors and some that look like candy corn, orchids that weigh 4000 pounds, and some which are nearly microscopic or smell awful. We have seen orchids that look like monkeys or mushrooms or receptive females. We have seen orchids without roots or leaves or that live dependent on fungus. We have seen orchids that love ants. Not every orchid is a big beauty, but we love them all, the stranger the better. Here is to all the freaks and stinkers!\*

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### About the Author



Carol Siegel, a retired English teacher and medical office manager, has been president and newsletter editor of the Greater Las Vegas Orchid Society for several years. She lectures on many subjects at societies, museums, and universities around the country and has written articles on Nevada's native orchids in addition to many for the *Orchid Digest*. Carol leads groups of Clark County school children on tours of the Springs Preserve, a museum and nature center complex.

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