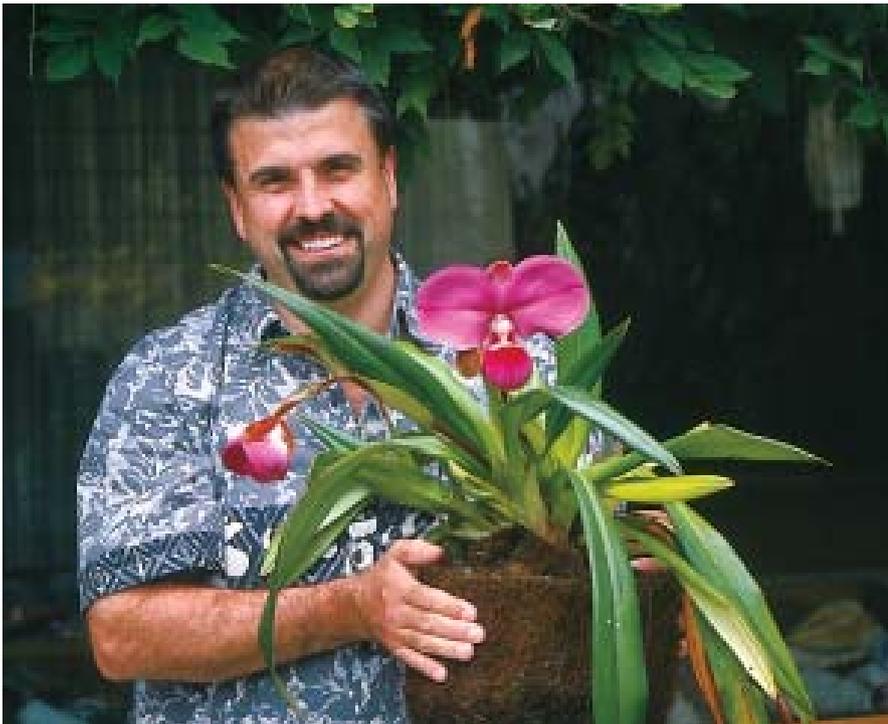


Phragmipedium kovachii

In 2001, the discovery of a slipper orchid in Peru captured the imaginations of orchid enthusiasts worldwide, including this New York State grower who made it his goal to successfully cultivate and hybridize this awesome orchid



ABOVE The author with a specimen of *Phragmipedium kovachii* in Peru.

RIGHT The flowers of *Phrag. kovachii* can reach 6 inches (15 cm) or more across.

OPPOSITE ABOVE Various views of the flower of *Phrag. kovachii* (left and center) and its bud.

TEXT AND PHOTOGRAPHS
BY GLEN DECKER

SLIPPER ORCHIDS HAVE ALWAYS had their stars, notably *Paphiopedilum sanderianum* and *Paphiopedilum rothschildianum*, and then, more recently, *Paphiopedilum armeniacum* and *Paphiopedilum vietnamense*. But, in modern times, it has been all about new species of *Phragmipedium*, starting with the introduction of *Phragmipedium besseae*, which is solely responsible for putting this genus in the forefront of hobbyists everywhere. In the early 1980s, who could have imagined that this slipper orchid could have been sitting in the jungle with its brilliant red-







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orange flowers for so long without anyone noticing? However, in 2002, an even more astonishing discovery awaited us all — *Phragmipedium kovachii*.

For me, it started in May 2003 when I was invited to go to Peru to see *Phrag. kovachii* in its habitat and endure a hike that Harold Koopowitz, PhD, editor of the *Orchid Digest* and a good friend, referred to as the “hike from hell.” It was a trip put together by a friend of ours, Isafías Rolando, MD, a well-known orchidist from Peru and, like me, an orchidaholic. At this point, I wasn’t aware of how involved I would become with the propagation, hybridization and preservation of this new species, but hoped that I would. During this adventure, I had the opportunity to speak in depth with a new friend, Alfredo Manrique, who owns and runs a small orchid nursery and lab in Lima, Peru. His company, Centro de Jardineria Manrique, was the first to be entrusted by the Peruvian government to collect five plants for the sole intention of preservation through propagation. And, it was during our adventure to the habitat, that Manrique collected those five plants.

A year later we met again in Miami, Florida, and formed a partnership for the propagation and distribution of this new find. At this time, Fritz Schomburg, PhD, of Tropical Propagations, in Madison, Wisconsin, entered the partnership. Schomburg’s many years of work developing flasking techniques in the lab with phragmipediums proved vital for this project. Fortunately, Manrique also had a lab in Lima, since all the initial lab work and flasking had to be done there. The first couple of years required several trips to Lima for Schomburg and me to get the original breeding and flasking started. Miluzka Damian, Manrique’s lab technician, was there to give us a hand and was responsible for the care of the mother flasks that were eventually brought to the United States, where Schomburg brought them to his lab to complete the work that was initially started in Peru. Today, we have hundreds of seedlings of *Phrag. kovachii* and its hybrids in the lab and nursery, here and in Peru, hoping to permanently change the way we presently look at phragmipediums.

With the most exciting plant find in years, there is bound to be controversy and *Phrag. kovachii* was no exception. From the onset, *Phrag. kovachii* or, as

many now refer to it as “PK,” was visited with the seven deadly sins.

Lust ... The rape and pillaging of several habitat sites, which fortunately has slowed down to a crawl recently. However, at the time of my visit in 2003, the first habitat site had already been wiped out of thousands of plants. The habitat site that we explored was also wiped clean a few weeks after our visit.

Gluttony ... The senseless destruction of those habitats. How many plants needed to be collected? We have estimated that at least 5,000 plants or more have already been taken, but clearly that wasn't enough, because this plant continued to be collected. I believe that, to date, the first habitat site is completely wiped out, the second pretty well picked through and a third site has experienced some damage, but still seems to be fairly intact.

Greed ... When I first heard of *Phrag. kovachii*, it was being offered for sale in the United States, illegally, of course, for \$10,000 for two plants. Later, rumors surfaced of its being offered throughout Europe for \$1,000 for one plant. Why not, when you consider lust and gluttony?

Sloth ... CITES is an international agreement that governs trade, perhaps with conservation side effects. Do we need regulations and control measures? Absolutely. However, the faster a new species can be introduced into cultivation, the sooner the pressures of having that plant ravaged from its habitat will be lessened. A good example is the mass propagation of *Phrag. besseae*. With thousands of plants now in cultivation, the desire to purchase a jungle-collected plant is almost nil. Now, look at *Phrag. kovachii*. It has been five years since its discovery and we are only starting to get plants into cultivation, but in the meanwhile, tens of thousands of plants have been taken from the jungle and, out of those plants, very few survived.

Wrath ... I don't know of any plant in recent time, or at any time, that has been afflicted with so much controversy. From its discovery, the naming of the plant was the start of it all. When a group of Peruvian orchid enthusiasts heard of the new plant, they contacted Eric Christensen, PhD, who promptly described it and, with the people of Peru in mind, was going to name it *Phragmipedium peruvianum*. However, a specimen of this plant found its way to the Marie Selby



Botanical Gardens, in Sarasota, Florida, where it was finally given its present name, *Phragmipedium kovachii*.

Envy ... The overall desire to possess this plant and be the first has brought on the over-abundance of scandals, rumors, lies and more. From the moment that I, Koopowitz and the rest of the group returned from Peru, we were accused of collecting the plants from the habitat site we visited. The rumors even went as far as saying that they had photographs of us in a helicopter. Boy, if we had a helicopter, we would have never experienced the hike from hell.

OPPOSITE ABOVE *Phragmipedium kovachii* 'Memoria Grimanesa Manrique', CHM/AOS. Grower: Centro de Jardineria Manrique.

OPPOSITE *Phragmipedium kovachii* photographed in its native habitat in Peru. TOP and ABOVE Two clones of *Phragmipedium kovachii*. Grower: Centro de Jardineria Manrique.



Pride ... Last but not least, but the root of all sins. With pride sometimes comes arrogance and with the absence of common sense and humility you find yourself consumed with the other deadly sins. Enough said.

CULTIVATION There have been many delays in the distribution of *Phrag. kovachii* due to the lack of understanding of its cultural needs. After a couple of years, I feel that we can finally give sound advice on how to grow it but first, let's go back and look at its habitat.

Manrique and Pablo Bermudez, an orchid grower and member of Club Peruano de Orquídeas, the Peruvian Orchid Society, can provide us with the following information about the habitat. *Phragmipedium kovachii* can be found growing on the northern side of the sub-Andean basin, in the Peruvian regions of Amazonas and San Martín, at elevations of 5,250–6,400 feet (1,600–1,950 m) in tropical cloud forests. Found growing in valleys running east-west on cliffs facing south, the plants receive cloud-filtered sunlight from noon until sunset. The average temperature during the summer is 79 F (26 C) and in the winter 64 F (18 C) in a region that can have an average rain fall of 40 to 60 inches (1,000–1,500 mm). It rains almost daily in the afternoon, with persistent but moderate showers, and good air movement because high winds of 60 mph can be present.

The substrate that *Phrag. kovachii*

can be found growing on is cretaceous limestone. The habitat soil is composed of crushed limestone, mixed with organic matter.

Measurements of the habitat soils are as follows:

- ◆ pH lightly alkaline: 7.9
- ◆ Electric conductivity: dS/m 0.41
- ◆ Calcium carbonate: 85.7 percent
- ◆ Organic matter: 1.5 percent
- ◆ Phosphorous: 1.9 ppm
- ◆ Potassium: 60 ppm
- ◆ Water quality of the habitat: pH 6–6.5 E.C. 20 ppm

Medium As a grower, I think the first of the two most important things to look at is the pH of 7.9, which is really not a surprise when you consider that 85.7 percent of the soil is composed of calcium carbonate, which is the other important factor here. When we first started growing *Phrag. kovachii* from flask, we planted them out into sphagnum moss, which is what we usually use for phragmipediums. However, we found the plants just sat there, many dying, and others did not grow. This went on for months. Of course, this was before we had all the facts on the habitat. The problem with sphagnum moss, which is on the acidic side, is that it continues to get more acidic as it breaks down. Naturally, with a plant that we now see growing in a pH of 7.9, being more acidic was far from desirable. Since then, we have moved all of our plants to a basic seedling bark mix, but keeping in mind

the high content of the calcium carbonate found in its soil. Here is the potting mix I am presently using and we are pleased with its results: 6 parts seedling or fine grade bark, 1 part horticultural charcoal, 1 part sponge rock or large perlite and ½ part of calcium chips or cracked oyster shells.

For larger plants, we would swap out two parts of fine-grade bark and replace it with two parts medium-grade bark. Once we moved all the plants into this, within six weeks we started seeing huge improvements with the root growth, which is what we wanted to see. Now, do not worry about finding calcium chips or cracked oyster shell. If you are fortunate enough to live in a farming community, that's easy. Any store that sells animal feed will stock one or both of these. It's inexpensive; I think it costs around \$6 for a 50 pound (_) bag. Share it with your friends. However, I use it for all my paphiopedilums and phragmipediums. Both of these products are used as a poultry feed supplement to egg-producing chickens to help strengthen their shells. I would assume that any large specialty bird store or pet store would carry it as well, for the same reason, to feed to nesting birds of all types.

Water Using higher-quality waters, such as RO (reverse-osmosis) water or rainwater, will be an advantage; however, I think you should be able to use other types of water, but watch the salt levels. Do not use water softeners because they use salts to accomplish this function. As with all types of phragmipediums, we want to keep the medium moist to almost wet at all times.

Nutrition Plants of *Phrag. kovachii* tend to do best with regular applications of fertilizer; however, young plants should be grown with lighter dosages. I won't recommend a percentage or at what rate, because this is something that is clearly defined by how you grow and your own growing conditions. As a monthly supplement, I also like to provide calcium nitrate as well as magnesium sulfate (Epsom salts). Although I said to watch your salts, all fertilizers contain salts. During the summer, I also supplement with fish emulsion or kelp extract. Both are nitrogen-based foliar feeds, which I feel benefit the plants during the growing months. As with all fertilizers, following the manufacturer's recommended dosages is a good start, but if they tell you a rate of once a month, break it down and apply it weekly. For windowsill and



under-lights growers, I recommend cutting the rate in half, because these growing conditions can sometimes be less than optimum.

Tip for Success Here's an important tip for developing healthy plants — grow them under much-reduced light levels. Plants in flasks are in low light levels, so once we transplant seedlings from flask to community pot, we want to continue growing them in this low-light situation until the plants develop roots and harden off their leaves. The recommended light level that I suggest would be about half of what you would normally grow a *Maudiae*-type paphiopedilum or a phalaenopsis. This could be for several months, but once the leafspan approaches 6 to 8 inches (15 to 20 cm), slowly start to increase the light levels. Mature plants can be grown in much brighter conditions, approach-ing those suggested for cattleyas. (Remember that higher light levels require higher fertilizer levels.)

Temperature *Phragmipedium kovachii* is a higher-elevation plant, so cooler temperatures are a plus. At the habitat site, there were other orchids, including *Masdevallia lamprotyria*, *Maxillaria sanderiana* and different species of *Lepanthes*, *Pleurothallis* and *Restrepia*. These are good reference points on where to begin when discussing temperatures for *Phrag. kovachii*. When dealing with orchids requiring cooler temperatures, it is not

necessarily the daytime temperature, but rather the nighttime temperature that is important. If you have the ability to maintain or create lower temperature at night, you should be successful. Another way of dealing with higher temperatures is to lower the intensity of the light levels. When plants in need of cooler temperatures are exposed to higher temperatures as well as higher light levels, there will be a problem.

With the information provided above, it should be possible to grow *Phrag. kovachii* successfully. If you can remember only a few key points, keep these in mind: watch the pH, add calcium to the potting mix, keep it moist to wet, and finally, grow the plant in lower light until the specimen reaches a reasonable size.

HYBRIDS The next chapter for *Phrag. kovachii* was to hybridize this plant. *Phragmipedium kovachii* is a species with flowers of incredible size — more than 6 inches (15 cm) across — and color, and we had no idea how it would influence its progeny. This for me was, in some cases, more exciting than the species. To date, we have made dozens of hybrids using *Phrag. kovachii*. I get asked questions such as, “Why haven't we crossed it with this one or with that one?” There is a reason we made the hybrids we did — the five plants collected that day of our adventure are still considered the property of the Peruvian government. The plants are not allowed to be sold

OPPOSITE *Phragmipedium* Haley Decker (*kovachii* × Saint Ouen), was the first *Phrag. kovachii* hybrid to flower. It is shown here (center) flanked by *Phragmipedium besseae* (left) and *Phragmipedium schlimmii*, the parents of *Phrag. Saint Ouen*. Grower: Piping Rock Orchids.

TOP LEFT *Phragmipedium* Haley Decker is named for the author's daughter. Grower: Piping Rock Orchids.

TOP *Phragmipedium* Haley Decker, which flowered for the first time in February 2007, shows variation in shape, with flowers ranging in natural spread from 4 inches (10.2 cm) to 5¼ inches (13.3 cm). Grower: Piping Rock Orchids.

or to leave Peru, including artificially propagated divisions. All of the breeding must be approved by the Peruvian government and the only hybrids we could make were created with plants presently growing in Peru from Manrique's personal collection of phragmipediums, so we were limited to what was available. It was also illegal to take pollen out of the country, because it would require CITES permits, which the government would not approve. Fortunately, Manrique has a decent collection of phragmipediums to work



with, including many hybrids derived from *Phrag. besseae*, so I felt it appropriate to go right into breeding with these other hybrids.

Fortunately, like most hybrids, those of *Phrag. kovachii* are easy to grow and bloom. We flowered the first hybrids from flask in about 14 months. Growing these hybrids is no harder than any other *Phragmipedium* hybrid because, as a hybrid, the temperature and water requirements are no longer an issue. However, I would still add the calcium, because the plants will benefit, and, as with *Phrag. besseae* hybrids, if you can give cooler temperatures, you will be rewarded with even larger and darker flowers.

The first hybrid to flower is named after my daughter. It is *Phragmipedium* Haley Decker (*kovachii* × Saint Ouen). *Phragmipedium* Saint Ouen is a second-generation *Phrag. besseae* hybrid (Hanne Popow × *besseae*). Waiting for the first to flower was excruciating. Here we were using a brand-new and exciting species, but how would it breed? Would its traits be dominant or recessive? For all we knew, we could have produced garbage, so the wait seemed endless. Then, in February 2007, it flowered, and I was not disappointed. We have seen five plants of this grex flower to date and each has been similar in color, but different in shape. We have seen flowers ranging in natural spread from 4 inches (10.2 cm) to 5¼ inches (13.3 cm). The first, looking like a *Phrag. Hanne Popow* on steroids, was followed by the larger ones appearing similar to a smaller

version of *Phrag. kovachii*. In both cases I was pleased, but which one is dominant? It is still too early to tell. The best we can hope for in all the hybrids is plants that are smaller than *Phrag. kovachii* that clump and do not climb, similar to *Phrag. besseae*, along with larger flowers on a shorter inflorescence. So far, it seems to be what we are getting, but again, it's too soon to tell.

A couple of days later, the next hybrid flowered: *Phragmipedium* Fritz Schomburg (*kovachii* × *besseae*), named after our partner in Wisconsin. To date, we have only flowered one plant of this grex, and it had a natural spread of 4 inches (10.2 cm). It had some problems, but there was only one flower. A week or so later, there was news of a couple more of this grex flowering in South Carolina. These were definitely more promising, looking similar to a *Phrag. besseae*, again on steroids. I look forward to seeing more of them, but this was a hybrid that produced little seed; from two seed capsules we were only able to get a handful of seedlings.

Next was *Phragmipedium* Alfredo Manrique (*kovachii* × Walter Schomburg), a *Phragmipedium* Eric Young hybrid crossed onto *Phragmipedium* Andean Fire and named after our partner in Peru. Worth the wait, these were a little slower to get going. The first to flower was nice, but some of the more recent ones have been stunning, with a natural spread of 5½ inches (14 cm). The one pictured here (opposite above) is still in flower and

ABOVE LEFT *Phragmipedium* Suzanne Decker (*kovachii* × Cape Sunset), left, with *Phragmipedium* Memoria Dick Clements (*sargentianum* × *besseae*).

ABOVE *Phragmipedium* Suzanne Decker, whose flowers have a spread that has been more than 6 inches (15.2 cm).

OPPOSITE ABOVE *Phragmipedium* Alfredo Manrique (*kovachii* × Walter Schomburg) can produce four flowers on an inflorescence.

OPPOSITE *Phragmipedium* Jason Fischer (Memoria Dick Clements × *besseae*), left, with *Phragmipedium* Alfredo Manrique (*koavchii* × Walter Schomburg).

is working on its fourth flower. This is exciting because most of the hybrids to date have been producing only one to two flowers per inflorescence their first time out, which was expected. As these plants mature, they should produce more flowers on each of their inflorescences.

Phragmipedium Suzanne Decker (*kovachii* × Cape Sunset), which I named after my wife, was the next to flower. This was also a *Phrag. Eric Young* hybrid crossed onto *Phrag. schlimii*. With *Phrag. schlimii* in the background, I had hoped that its color dominance would come through, and it did, creating the first *Phrag. kovachii* hybrid to flower pink. These have been consistent in size and color. The natural spread has been more than 6 inches (15.2 cm), but what I really like is the dark pink with the white blush in the center of the petals. This was the

first to be recognized with a flower-quality award by the American Orchid Society at the Redlands International Orchid Festival in May 2007.

The next was *Phragmipedium Memoria Mariza Rolando*, named after the late wife of our dear friend Dr. Rolando. A cross between *Phrag. kovachii* and *Phrag. Hanne Popow*, it had characteristics similar to those of the first two hybrids to bloom. Most recently, we have flowered (*kovachii* × Living Fire 4N). Yet to be registered and, considering we have seen only the first plant to flower, it is difficult to make a full assessment of the cross. However, these will probably put forth the largest flowers with a natural spread of more than 6 inches (15.2 cm), looking like a large *Phrag. Living Fire*.

Of course, the full potential of *Phrag. kovachii* hybrids has yet to be seen and the best, I'm sure, is to come. So far, the breeding results have met all of our expectations with average-size plants, a more compact inflorescence with larger flowers and good color. I feel once we get into second-generation hybrids, we will truly see its potential. For now, we are waiting for the balance of our hybrids to bloom and shine. *Phragmipedium kovachii* has probably been the most important and exciting find in orchids in the past 100 years, and it could well be that for the next 100 years.

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