

A Discussion of *Phragmipedium* Species and their Influence on Hybrids
By Ingrid Schmidt-Ostrander
Published in June 2002 Awards Quarterly

*Phragmipedium*s have been known to Europeans since 1787, when *Phragmipedium boissierianum* was collected and described by Ruiz and Pavon. Hybrids in this genus were first made in the mid-1800s (about 150 years ago). Until *Phragmipedium besseae* with its brilliant colors was discovered in 1981, the modern orchid world was not much concerned with both the species and hybrids of this genus. Perhaps it is time to become reacquainted with these South American slipper orchids.

At the moment, there are 25 to 27 different species (including their varieties) recognized. These have been grouped into five sections, according to their structure. Let us look at the properties of each section, to learn to recognize them and their potential influence on hybrids. This article is not much concerned with the individual species and, therefore, will not often mention the colors, staminodes, degrees of hairiness, alkaloid and chromosome counts or geographical distribution; all that is well documented elsewhere.

Phragmipedium* section *Phragmipedium

This section includes *Phragmipedium caudatum*, *Phragmipedium warscewiczianum*, *Phragmipedium wallisii*, *Phragmipedium lindenii* and *Phragmipedium extaminodium*. The large flowers have extremely long, slightly twisted petals; in a true species of this section, the mature petals should be at least 45 to 50 cm and can grow as long as 100 cm. For purposes of AOS judging, longer definitely is better. When judging a species from this section, mature petals shorter than 40 cm indicate that all is not right with the plant. The dorsal and synsepal are usually quite long, droopy and twisted, so that would not be considered poor shape. The rim of the pouch must flow in one smooth line without protrusions, and the leaves are quite stiff and stand straight up. Flower bracts are small and rounded and the flowers merit a higher score. Flower sizes differ between the species, with *Phrag. Wallisii* having the smallest flowers of this section. The judges must be certain that they are really looking at an original species that fulfills all the criteria listed above.

Phragmipedium* section *Platypetalum

This section includes *Phragmipedium sargentianum*, *Phragmipedium lindleyanum* and *Phragmipedium lindleyanum* var. *kaieterum*. All three have relatively wide, almost spade-shaped petal tips. For the species of this section, look for well-displayed, wide petals as positive and narrow petals with many twists as less desirable. The length of these petals is about double the length of the sepals, and they usually point to the sides; the dorsal stands up. The rim of the pouch is smooth and flows in one line; leaves are quite long and stiff. Whether or not there is a yellow edge on these leaves makes no difference; some have it, others do not. In this group, *Phrag. Lindleyanum* var. *kaieterum*, can be expected to be a little smaller than the other two, and mature, well-grown representatives of *Phrag. Sargentianum* can reach large proportions. (As many judges already know, *phragmipedium*s on judging tables are often young; seldom are truly mature specimens seen.) The flower bracts of plants in this section are small, and flowers open in succession.

Phragmipedium* section *Himantopetalum

This section includes *Phragmipedium caricinum*, *Phragmipedium klotzscheanum*, *Phragmipedium pearcei* and *Phrag. Pearcei* var. *ecuadoriense* (*Phragmipedium richteri* has been omitted). Plants in this section are fairly small, with long, narrow leaves that look like grasses or sedges bending in wind and rain. The flowers are also fairly small and most show a straight dorsal. Thus, large flowers should not be expected from these plants; just observe the proportions, which can be nicely balanced. The flowers, which open one at a time, should look straight ahead, not hide their faces in modesty. Their slender, twisting petals generally point downward. The rim of the pouch is smooth.

Phragmipedium* section *Micropetalum

This section includes *Phragmipedium schlimii*, *Phragmipedium fischeri*, *Phragmipedium besseae* and *Phrag. besseae* var. *d'alessandroi*. These are small- to medium-sized plants with wide leaves. The flowers are full, round and quite flat, with petals and sepals of even length; their texture can be very velvety. These slipper orchids conform a bit more to handbook standards, and have well-shaped flowers with petals growing horizontally, except in *Phrag. besseae* var. *d'alessandroi*, where the petals grow downward at a steep angle and can even point backward. In this group, the dorsal sepals are somewhat cupped, rather than totally flat. Since that seems to be a general trait of these species, judges should not look for completely flat dorsal sepals. An observation about color: There are some *Phrag. besseae* that show darker shading, even mottling on the lower half of the petals and these forms have been passing their uneven color to their offspring. This can be distracting (in most cases), and can lower the color score for these plants. The pouch opening is small and smooth, and the sides of the pouch have windowlike slits. The floral bracts are small, and flowers open one at a time. Older plants will branch out and their flower count will be higher. Please remember that a true *Phrag. schlimii* will always have a yellow staminode.

Phragmipedium* section *Lorifolia

This section includes *Phragmipedium longifolium*, *Phrag. longifolium* var. *roezlii*, *Phrag. longifolium* var. *hartwegii*, *Phrag. longifolium* var. *hincksianum* (said not to have been in cultivation since the late 1800s), *Phragmipedium boissierianum*, *Phrag. boissierianum* var. *czerviakovianum*, *Phrag. boissierianum* var. *reticulum*, *Phragmipedium hirtzii* and *Phragmipedium vittatum*. As an aside, *Phrag. dariense* is now considered by some authorities as a possible mutation, which means it does not exist as a true species. Just looking at this list, one can see how variable plants in this section are. This also applies to size, with *Phrag. longifolium* var. *hartwegii*, at up to 1.5 m, said to be the tallest of the group, and *Phragmipedium hirtzii*, at about 25 cm in height, the shortest. Plants in this section have twisting, pointed, curly-edged petals that are about three times longer than the dorsal sepal. When measuring a flower from this section, it makes a big difference whether the petals grow horizontally or not; judges ought to be less concerned with the natural spread and look for overall proportions and symmetry. The synsepal is usually very large, which can be misleading. A freshly opened bloom will show a disproportionately small pouch sitting on this large synsepal. After the flower has been open for about three days, the pouch will have matured and will be in better proportion, but still, will not cover the lower sepal. This is more noticeable in the *Phrag. boissierianum* group. The leaves are long and hang over, and the long, pointed bracts are prominent. One important feature, unique to this section, is that every species has protuberances along either side of the pouch. These can resemble pointed horns,

triangles, flanges, little ears and other shapes; they are always there and can be called the hallmark of the section. This feature is passed on to its offspring. Once one has noticed it, it won't be missed on all flowers with this trait.

Hybridizing Phragmipediums

When hybrids are created, Mendel's law comes into effect:

F₁ Generation: red x white = pink

F₂ Generation: pink x pink = 25 percent red, 50 percent pink, 25 percent white

F₃ Generation: pink x pink = 12½ percent red, 75 percent pink, 12½ percent White

F₄ Generation: 6¼ percent red, 87½ percent pink, 6¼ percent white and so on. In about 10 generations, a cross could become stable. If the F₂ cross is made with the original color, the results will not be the same, of course. If any generation is crossed back to the original parent, the outcome may be predictable.

When a plant from the section *Phragmipedium* is crossed to one from sections *Platypetalum*, *Himantopetalum* or *Micropetalum*, expect fairly large flowers, droopy sepals, long petals, flowers that all open at once, and straight edges on the rim of the pouch.

Section *Platypetalum* produces fairly vigorous offspring (*Phrag. sargentianum* in particular passes on tall inflorescences). Expect somewhat wider, more horizontal petals with slightly undulating edges, often with orange tones on the good-size flowers, and straight edges along the pouch rim.

From section *Himantopetalum*, offspring will have smaller plants and flowers, some twisting on the petals, and an even edge around the rime of the pouch.

Parents from section *Micropetalum* will reduce plant size, but yield wider leaves and brightly colored, rounded, often velvety flowers (pink shades from *Phrag. schlimii* and red-orange tones from *Phrag. besseae*). If an albinistic or flavistic parent was used in the hybrid, the resulting colors will be much lighter. The pouch rims will be smooth.

Section *Lorifolia* shows in its F₁ hybrids (and often beyond that) more foliage (again, varieties of *Phrag. longifolium* will produce larger plants; hybrids with the diminutive *Phrag. hirtzii* will be smaller). Lighter colors can be expected of crosses with *Phrag. hirtzii* var. *hartwegii*. With *Phrag. boissierianum*, darker flowers may show the influence of var. *roezlii*. The stems will have very heavy bracts, the flowers stiffer petals and dorsal sepals. All of these plants will show gentle flanges on the pouch sides; they will not be as large and prominent as in the species, but always noticeable.

All of these features, corresponding to their respective section, show the shape to be expected from these hybrids. If the label says one thing and the flower something else, question the label. Conversely, if a plant on the judging table has a species name, be certain that this really is the species. For instance, any *Phrag. caudatum* should conform to the above criteria. Any members of section *Lorifolia* must have those large or small "ears" along the side of the pouch, not just slightly wider rims.

We know that labels can be wrong. During the span of time in which phragmipediums have been cultivated and hybridized, there were many chances to make errors, not only on the labels. Now we are saddled with the resulting problems.

As judges, we are only human; we could possibly even make tiny little mistakes. But when awarding plants, there is an obligation to other orchid growers. Not only is it part of the judges' mandate to recognize quality, but we should also recognize what plant it is

that is being awarded. Some orchid species have been around for so long that we think we know them, but our ability to really recognize the parameters of the species may be questioned. It is expected of us to recognize the particular properties of so many orchid species, including old and new *Phragmipedium* species. In the latter genus, we should, at least, recognize the sections. Then if hybridizers can work with correctly named species, they can create hybrids with correct names. If they work with incorrectly named parent, chaos will result. If we as AOS judges make mistakes, we are responsible for the ensuing chaos. Let us try to avoid chaos by creating order.

Ingrid Schmidt-Ostrander is an AOS accredited judge in the Pacific Northwest Judging Center.