

GENUS OF THE MONTH

# *Cypripedium*

by Thomas Mirenda/Photographs by James Fowler

Footsteps Along a Legendary Path





OBSSESSION WITH THE orchid world is nothing new. It is clear that many orchids captured the imagination of earlier cultures, and were referenced in the art and literature of the day. Lore and legend of the ancient world even generated the nomenclature for these plants. Both genera *Cypripedium* and *Paphiopedilum* were coined to reflect a story about Aphrodite or Venus, losing her shoe in the forest and having it magically transform into one of the most interesting and beloved of wildflowers, the lady's slipper. Not only do slipper orchids still inspire devotion and obsession, but they are finally becoming within the reach of the horticultural community. While paphiopedilums and phragmipediums have been avidly cultivated for a very long time, the temperate species of the Northern Hemisphere have proven to be more of a challenge.



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While it is tempting to think of the shoe-like lips as footwear for fairies or other mythical creatures, the pouches are actually even more fantastic when one realizes that they are insect manipulation devices! Pollinators are attracted to flowers by their lovely colors, but most flowers, despite exuding oils from internal pouch hairs, are most likely engaging in deception. The pouch is actually a rather passive-aggressive structure, temporarily trapping the insects and directing them to small openings near the staminode that bear pollen and where, subsequently, said male gametes will be deposited by another visitor in the future. The differences in lady's slipper pouches are all about catering to the deception of a variety of insect pollination partners. It gets even more fascinating once you delve into the details.

Thrilling to see when encountered on a trail, it is understandable why gardeners would want to cultivate such fascinating and beautiful plants. Unfortunately, wild plants virtually never fare well in cultivation, as their environmental needs, particularly the need for symbionts such as mycorrhizae and even bacteria, are rather specific. Therefore, they should never, ever, ever be removed from where they naturally occur, with the possible exception of plants rescued from development sites. Happily, many of the secrets to seed propagation and ex situ cultivation have been unlocked rather recently, allowing us to try our hands at growing these gorgeous species



2

without compromising wild populations. An understanding of their life cycles and needs in cultivation is essential if we hope to preserve these spectacular plants through the inevitable environmental changes coming our way. If you have the appropriate conditions in your garden, I encourage you to try to grow some seed-propagated cypripediums.

Most important to realize, however, is that all cypripediums are not the same. Distributed widely throughout temperate regions of the Northern Hemisphere, cypripediums have rather specific and stringent requirements. Seasonally deciduous, plants are usually winter dormant, retreating underground during the cold or excessively dry periods of local seasonality. Even among just the North American species, ecological conditions vary wildly! *Cypripedium acaule*, one of the more common species

[1] *Cypripedium parviflorum*, widespread over much of North America, has four very variable varietal forms. *Cypripedium parviflorum* var. *pubescens* (large photograph) generally has larger, often lighter colored flowers, although small, dark forms can be easily confused with *Cypripedium parviflorum* var. *parviflorum* (inset).

[2] *Cypripedium acaule*, restricted to eastern Canada and the northeastern United States, cannot be confused with any other species. Flowers range in color from those with pure green sepals and petals and a white pouch to those with nearly maroon sepals and petals and very deeply colored pouches.





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in the northeast and mid-Atlantic states, seems to require very acidic conditions, while the opposite would be true for the magnificent *Cypripedium californicum*, which occurs rather specifically in serpentine seeps in the company of *Darlingtonia* in a localized area of northern California and southwestern Oregon. Other North American natives such as *Cypripedium parviflorum*, *Cypripedium kentuckiense* and *Cypripedium montanum* occur in temperate woodlands but each have different temperature and soil requirements. The ram's head slipper orchid, *Cypripedium arietinum*, is mostly restricted to sphagnum bogs over limestone in the north. Other boreal species include *Cypripedium passerinum*, the sparrow's egg ladyslipper, which can literally carpet the ground in the summer in moist areas of northeastern Canada and the enchanting and colorful *Cypripedium guttatum* of the northwestern coast of the American continent, extending across the Pacific to Korea and westward all the way to European Russia.

As beautiful as all these species are, it is *Cypripedium reginae*, or the Queen's Lady's Slipper, that is probably the most coveted. With its stately stature and large, showy blossoms, this species impressed me greatly when I first encountered a population on a small island in Greenwood Lake, New York. As a boy, rowing out to a little island and finding these marvels of nature completely blew my mind. Since then I've enjoyed seeing them in several other locales but always in the company of plentiful water, near seeps, streams or bogs. On the complete opposite end of the spectrum is the rather odd *Cypripedium fasciculatum*. With its almost ruffled, wide basal leaves, and small-flowered inflorescences, you could easily bypass the cryptic blooms even while in full anthesis! But those flowers are actually rather lovely and amazingly different when encountered up-close and personal.

While I've not yet seen them in person, there are even species that have found their way into Mexico and Central America, such as *Cypripedium irapeanum*. Even these latitudinally subtropical species are also temperate growers, as they tend to occur at higher elevations.

All the heretofore mentioned species are natives of the Americas, even though *Cyp. guttatum* extends well into Asia and Europe. One other very important wide-ranging species, *Cypripedium calceolus*, superficially similar to *Cyp. parviflorum*, ranges remarkably from



the British Isles all the way to Japan! Asia, with its enormous size, varied topography and geology, boasts some of the most incredible of the cypripediums, displaying fantastic diversity and possibly even more mind-blowing adaptations. It is interesting to note that many of the Asian species have close phylogenetic associations with our North American species (e.g., *Cypripedium flavum* of China and *Cyp. reginae* of North America), which is why so many have been readily hybridized into the very strong garden plants currently finding their way to our gardens. A review of these Asian species will have to wait for a future article in this column. Suffice it to say, these slippers lead us down a remarkable path, one that has beguiled naturalists from ancient times through to the present and gives us a glimpse of both the magic world of mythology and the even more fascinating world of ecology and evolution.—*Thomas Mirenda is the orchid collection specialist at the Smithsonian Institution. 3000 Cedar Lane, Fairfax, Virginia 22031 (email MirendaT@si.edu).*

- [3] *Cypripedium californicum* is one of the most distinctive in the genus. The species is endemic to the Siskiyou Mountains of far northwestern California and southwestern Oregon usually between 1,500 and 5,250 feet (450–1,600 m). Plants are usually found growing in association with the pitcher plant, *Darlingtonia californica*; another species endemic to the area. Stems can reach nearly 4 feet (1.2 m) tall and carry a dozen charming little flowers.
- [4] *Cypripedium montanum* is a relatively uniform species with strikingly colored maroon-brown sepals and petals and a contrasting white lip.
- [5] *Cypripedium reginae*, the state flower of Minnesota, is another species that cannot be mistaken.
- [6] *Cypripedium passerinum*, one of the far northern species, is a relatively small plant with flowers about the size of a small dove's egg. While small, the fully opened flowers (inset) are very attractive.