

# Unraveling a Rainbow

## 3. *Vanda coerulea* and the Blues

**B**lue, the rarest color in flowers, is rarer yet in orchids. "Blue" cattleyas are a conventional classification, not a reality. *Zygopetalum* lips and those of *Acacallis cyanea* are true blue-violet. But true sky blue exists in cultivated orchids only in the flowers of *Vanda coerulea*. The color not only exists but exists in profusion on long scapes of large, incredibly blue flowers.

The early hybridists saw in *Vanda coerulea* much more dynamic potential than in the large, formal and rather staid *Vanda sanderiana*. Measured by the eye of the beholder rather than from the orchid judges' ruler and score card, *Vanda sanderiana* must always be humbled and overwhelmed by the profusion of open, loosely arranged, stunning blue flowers produced by *Vanda coerulea*.

*Vanda coerulea* ranges through the Himalayas from India and Nepal to Burma and northern Thailand. It grows at elevations above 2,500 feet up to 4,000 feet, where the plants are subjected to night temperatures considerably lower than those experienced by most other *Vanda* species. *Vanda coerulea*, indeed, cannot be maintained for very long at sea level in the true tropics and inexperienced growers in South Florida frequently complain that it is an orchid difficult or impossible to grow. This cold tolerance is one of the factors which endeared the species to early European breeders. It should continue to have importance to growers of vandas in the temperate zone.

Another characteristic of *Vanda coerulea*

### Creating *Vanda* Hybrids



that should be noted by those whose climate forces them to grow vandas in greenhouses is the size of the species. Although the plants can become rather tall, the leaf span of *Vanda coerulea* is quite narrow, occupying much less bench space than *Vanda sanderiana*. Jungle plants of *Vanda coerulea* are scarcely more than 6" across. Cultivated forms originating in Thailand frequently are two to two and a half times as broad. Whether this is the result of polyploidy or perhaps belies a hybrid nature must be left to conjecture. Although polyploidy has been confirmed in some Thai seedling populations, certainly the cultivated forms are improvements over the wild forms in color and shape, many frequently overcoming the *Vanda coerulea* tendency to twist its petals a full 180 degrees.

As a breeding plant, *Vanda coerulea* has contributed as many — if not more — positive features to modern vandas than has *Vanda sanderiana* and certainly many more than any other *Vanda* species. *Vanda coerulea* has given size, floriferousness, vigor, cold tolerance, color pattern and length of inflorescence to its hybrids. Its flawed shape is quickly overcome in second and third generations and its other positive char-

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Among earlier cultivars of *Vanda coerulea* are (clock-wise from top left): 'El Prado', CCM/AOS (89 pts. in 1964), grown by Mr. & Mrs. John T. Matthews of Tampa, Florida, which bore 300 flowers on 20 inflorescences, showing the floriferousness of the species; 'Martha Girl', grown by Alberts & Merkel Bros., Inc. of Boynton Beach, Florida, and photographed by Jean Merkel in December 1953; and 'Mary', AM/AOS (82 pts. in 1975), grown by Dr. & Mrs. M. C. Michel of Orinda, California, and photographed by Beauford B. Fisher.

acteristics can be seen in nearly all modern *Vanda* hybrids — including some of the best yellows.

Color comes to mind first in thinking of *Vanda coerulea*. Of course, there are blue flowers. But this orchid also occurs in shades ranging from pure white (which I saw in Chiangmai, Thailand) through pinks to almost reds, to blues, intense lavenders and to purple. The influence of *Vanda coerulea* as a pink parent is less well known (and

will be treated more fully in a subsequent article) but pink *Vanda* Rothschildiana clones are not that uncommon and appear with frequency in selfings and siblings.

Apart from its range of colors, *Vanda coerulea* also contributes its overall tessellated color pattern to its progeny. This marking, which it possesses in common with some other Himalayan species (*Vanda tessellata*, *Vanda stangeana*, *Vanda bensonii*) is subdued in most jungle-collected



plants, appearing as a faint pattern that can be read through the blue base color. In hybrids, the pattern emerges with authority and clarity, producing flowers boldly marked with a regular network of darker lines bordered by a nearly white coloration. This patterning also is characteristic of the cultivated forms of *Vanda coerulea* that have appeared in recent years in Thailand. In secondary and tertiary hybrids, the pattern is frequently muted but can reappear in a subtle way at several generations removed from the *Vanda coerulea* ancestor.

The inflorescence of *Vanda coerulea* also has contributed immeasurably to modern hybrids. It is both long and erect, sometimes as long as two feet, with two or more branches which can carry up to 25 flowers. This inflorescence is held well above the foliage, with the first flowers opening quite

clear of the leaves. In this very positive quality, *Vanda coerulea* exceeds *Vanda sanderiana* and also spaces its flowers in a less crowded way. The long, cylindrical flower heads of modern vandas gain their height and spacing from *Vanda coerulea* and gain their symmetrical arrangement nearly as much from *Vanda coerulea* as from *Vanda sanderiana*.

As luck would have it, *Vanda coerulea*, in addition to its other virtues, is the most free-flowering *Vanda* species. Well-grown plants in Florida will flower three, four or even five times a year. This quality is transmitted to its progeny. Primary hybrids frequently are as free flowering as *Vanda coerulea* and tend to extend its flowering season into the warmer months, when *Vanda coerulea* usually takes a break from fairly continuous blooming.

Dr. David L. Grove of Armonk, New York, who grew the gorgeous FCC winner shown on this month's front cover, has made a specialty of award-winning *Vanda coerulea* cultivars. At left is 'Orchidgrove Blue Sky', HCC/AOS (76 pts. in 1985). At right is an unusual pink cultivar, 'Orchidgrove', CHM/AOS (83 pts. in 1982). Both award winners were photographed by Charles Marden Fitch.







When *Vanda coerulea* was crossed with *Vanda sanderiana*, the result was **Vanda Rothschildiana**, perhaps the most famous primary hybrid in the genus. Among the numerous award-winning cultivars of this cross is 'Nelly', FCC/AOS (91 pts. in 1968), grown by Dick H. Hoen of Caracas, Venezuela.

Vigor also characterizes *Vanda coerulea* and its primary hybrids. The size and profusion of flowers in *Vanda Rothschildiana* and other primary hybrids constantly amaze orchidists. These primary hybrids manage to produce more and larger flowers than either parent because of true hybrid vigor. *Vanda sanderiana* or a *Vanda sanderiana* hybrid appear to add enough vegetative strength to permit the *Vanda coerulea* qualities to manifest themselves to their absolute potential.

The bloom display of *Vanda coerulea* is, after all, the more remarkable for being produced on such a relatively small plant. Primary *Vanda coerulea* hybrids, such as *Vanda Rothschildiana*, approach the ideal in vandas. Who could ask for more than 20-30 stunningly beautiful 5" blue-mauve flowers on multiple inflorescences carried well above the foliage and lasting 4-6 weeks and appearing two to four times a year? An orchidist, of course!

More idealized form, fuller and flatter,

and a wider range of colors were the obvious goals of hybridists. The first step in this process was to cross *Vanda Rothschildiana* back to *Vanda sanderiana* to produce *Vanda Onomea*. While improving shape, the number of flowers was reduced and the percentage of bright blues was small. Many *Vanda Onomea* cultivars are pink and most of the "blue" ones are tinged with gray. When *Vanda Onomea* is crossed again to *Vanda sanderiana*, the result, *Vanda Jennie Hashimoto*, is almost totally dominated by *Vanda sanderiana*. The addition of *Vanda sanderiana* alone could not lead to full-formed blues.

When the strong *Vanda sanderiana*-dominated hybrid *Vanda Mabelmae Kamahele* was crossed with *Vanda Rothschildiana* to produce *Vanda Judy Miyamoto*, the results were more dramatic. Although many clones of this grex were pinks, a number emerged as dark purples. The only difference in the parent of this hybrid from *Vanda Onomea* is the *Vanda tricolor* ances-





*A decade after Vanda Rothschildiana 'Nelly' (facing page) won its FCC in Caracas, the cultivar **'Blue Ribbon'** (above) won a First Class Certificate of 90 points from the American Orchid Society when exhibited by Sheldon Takasaki of Hakalau, Hawaii.*





*Vanda Rothschildiana* continues to garner awards from the American Orchid Society. Among more recent winners are: left, 'Starryln', AM/AOS (82 pts. in 1986), grown by Dick Farwell of Miami, Florida; right, 'Tropic 1', AM/AOS (84 pts. in 1987), grown by Muses' Tropic 1 Orchids, Inc., of Haines City, Florida. Both photographs are by Bob Smith.

tor of *Vanda Mabelmae* Kamahale. The effect of *Vanda tricolor* in this and numerous other hybrids is to diffuse color across the entire flower and to intensify its tones. The influence of *Vanda tricolor* is particularly evident in the clone *Vanda Judy Miyamoto* 'Blue Velvet', AM/AOS. On close inspection, the overall dark color of this cultivar can be seen to be composed of separate spots contributed by its *Vanda tricolor* ancestor. This clone also invariably blooms for me at the same times as my plants of *Vanda tricolor* var. *suavis*. Perhaps a fortuitous matching brought the *Vanda tricolor* genes to the fore in many *Vanda Judy Miyamoto* clones, considering that *Vanda Wai-mea*, which has the *Vanda Judy Miyamoto* grandparent *Vanda Ohuohu* (Clara Shipman Fisher  $\times$  *sanderiana*) as a parent, is not noted for such intensity, being by and large like an improved *Vanda Onomea*. The *Vanda tricolor* ability to assert its color at several generations removed also will be seen in our discussion of the Thai breeding of the 1970s.

*Vanda Rothschildiana*, when bred to other advanced *Vanda sanderiana* hybrids, has produced good blues. *Vanda Hilo Princess* (Eisensander  $\times$  *Rothschildiana*), registered by Masaya Miyao in 1973, exemplifies these hybrids, which are the finest products of Hawaiian breeders. Fortunately for ev-

eryone, the clone 'Alice', AM/AOS has been meristemmed and is widely available. Although it received its award in 1975, this cultivar still has appeal. The large mauve-blue flowers are full-formed and numerous and are carried attractively on erect stems held well above the foliage. Interestingly, *Vanda Eisensander*, the yellow *Vanda sanderiana*-type parent, has imparted more vibrancy to the color of *Vanda Hilo Princess* than might at first be expected. This is, however, an effect that seems to be characteristic of *Vanda dearei*.

The dark purples and intense deep reds that have characterized the best Thai hybrids of the past decade, as with *Vanda Hilo Princess* and *Vanda Judy Miyamoto*, all have either *Vanda dearei* or *Vanda tricolor* in their ancestry and manifest characteristics of these species.

*Vanda Gordon Dillon* (Madame Rattana  $\times$  Bangkok Blue) is a good starting point for understanding these very complex hybrids. Different clones of *Vanda Gordon Dillon* range from blues to pinks because of their elaborate heredity. The blue types are well exemplified by *Vanda Gordon Dillon* 'Lea', AM/AOS, a pale bluish white flower covered with large, intensely purple-blue spots, a type of marking to become very popular in both Thailand and the U.S.

The blue comes most directly from



*Vanda* Bangkok Blue (Diane Ogawa × *coerulea*), which also has *Vanda luzonica* as a distant ancestor. This is insufficient to explain either the pattern or intensity of color in *Vanda* Gordon Dillon.

The other parent of *Vanda* Gordon Dillon, *Vanda* Madame Rattana, is much more complex and doubtless carried the qualities which enhanced those of *Vanda coerulea* and *Vanda luzonica* in the *Vanda* Bangkok Blue which created *Vanda* Gordon Dillon 'Lea'. *Vanda* Madame Rattana has as one parent the *Vanda tricolor*-influenced *Vanda sanderiana*-type *Vanda* Sun Tan (Beebe Sumner × *sanderiana*) and as the other *Vanda* Memoria Madame Pranerm (Waipuna × Eisenhower), a yellow with reddish undertones whose *Vanda* Waipuna parent is known to produce both yellows and blues. The *Vanda dearei* influence from both sides of *Vanda* Memoria Madame Pranerm lent the intensity to the red of *Vanda* Madame Rattana and from there to *Vanda* Gordon Dillon. The *Vanda tricolor* qualities of *Vanda* Sun Tan carry through in the case of

*Vanda* Gordon Dillon 'Lea' as the intense spots. Despite the seeming distance in the ancestry, the qualities of *Vanda tricolor*, *Vanda dearei* and *Vanda luzonica* are clearly evident in the flowers.

As Treekul Sophonsiri pointed out at the 11th World Orchid Conference, "Thai growers like *Vandas* of very deep shades of blue or red." To them, "The flower size and the number of flowers per spray is not very important." Consciously or not, these preferences led Thai breeders to select parents which increased the influence of *Vanda tricolor* in their hybrids of the late 1970s and '80s. As a group, these hybrids can be seen to possess many characteristics of *Vanda tricolor* in addition to dark color. Flower size, stem length and number of flowers all have diminished. The darker forms of *Vanda tricolor* are noted for their short, sparsely flowered stems. This explains the curiosity noted by Dr. David L. Grove in his analysis of awarded *vandas* in the *Awards Quarterly* in 1983 (Vol. 14, No. 3) that as flower numbers increased in award-



*Vanda Onomea* resulted from crossing *Vanda Rothschildiana* back onto *Vanda sanderiana*. Some cultivars still exhibited the influence of *Vanda coerulea*. One such is 'Walcrest', which won a First Class Certificate of 94 points in 1970 (below) and a Certificate of Cultural Merit of 84 points in 1971 (left). The exhibitor receiving both awards was Walcrest Orchids of St. Petersburg, Florida.





ed clones, so did size. I think many of these dark flowers were influenced by *Vanda tricolor*, which reduced both size and flower number. If the influence of *Vanda coerulea* is greater, both size and number of flowers increase.

Other features from *Vanda tricolor* appear with frequency in this group. Many possess heavy substance undreamed of in either *Vanda sanderiana* or *Vanda coerulea* and almost universally among the darker purple flowers, you find a peripheral edge of white which is present in all forms of *Vanda tricolor* and not in either *Vanda sanderiana* or *Vanda coerulea*. The edges of many of these flowers are ruffled in the manner of *Vanda tricolor* as well and many of them (including awarded clones) have the narrow, stippled petals of *Vanda tricolor*, leaving windows between the dorsal sepal and petals.

This is surprising in flowers whose genealogy indicates such dominance of *Vanda sanderiana*. Shape, too, might be added to

the list of qualities which have taken second place in Thai breeding. Another frequent problem is that these hybrids also have the lax flower stems of *Vanda tricolor*. A fortunate effect of the increased influence of *Vanda tricolor* is that these hybrids are more precocious, blooming in less time on smaller plants. Charungraks Devahasdin, one of the noted breeders on these lines, urged me to take all the largest seedlings of his crosses, perhaps for this very reason. I, looking for other qualities in Thai breeding lines, was happy to oblige.

*Vanda Kasem's Delight* (Sun Tan × Thospol) is a seminal Thai hybrid which clearly shows the strong influence of *Vanda tricolor*. Coming in both pinks and dark purple-blues, *Vanda Kasem's Delight* frequently appears in both types with nearly solid color in the lateral sepals and nearly solid petals, with an intensely spotted dorsal sepal. The color of these flowers shows their *Vanda tricolor* genesis in the characteristic white border. *Vanda luzonica*,

***Vanda Judy Miyamoto*** (*Mabelmae Kamahete* × *Rothschildiana*) also exhibits the influence of *Vanda coerulea*. The cultivar **'Macadee'**, HCCAOs (76 pts. in 1972), shown below, was grown by Mr. & Mrs. M. A. Lester of Sacramento, California, and was photographed by Beauford B. Fisher. **'Barbara'**, AM 108 (80 pts. in 1969), shown at right, was grown by Mr. & Mrs. Joseph Mitterer of Goulds, Florida.







An important hybrid from Thai breeding has been **Vanda Kasem's Delight** (*Sun Tan* × *Thospol*), made by Kasem Boonchoo of Bangkok, Thailand, and registered by Thai-Am Orchids, also of Bangkok, in 1978. Above are the darkly colored cultivars '**The Deep**', AM/AOS (83 pts.), shown at left, and '**Triton's Treasure**', AM/AOS (81 pts.), shown at right in a photograph by Adrian R. Teaf. Both clones were grown by Robert D. Smith of Key West, Florida, and received their awards in Philadelphia, Pennsylvania, in 1985.

doubtless, also has had some influence through the *Vanda Thospol* parent. Both *Vanda luzonica* and *Vanda tricolor* are not nearly so distinctly spotted as they appear at first glance. *Vanda tricolor* var. *suavis* frequently has a pale cast of color over the "white" portion of the flower and *Vanda luzonica* in its darker forms, such as the cultivar 'Evelyn', opens pale pink overall and pales further to white with pink spots. On the basis of the hybrid behavior, you might speculate on whether these spotted species, like *Rhynchostylis gigantea*, *Aerides quinquevulnera* and *Arachnis flos-aeris* are capable of producing solid color forms.

Various purple clones of *Vanda Kasem's Delight* show the different qualities of *Vanda tricolor* carrying through the overall predominance of *Vanda sanderiana* and *Vanda coerulea*. In *Vanda Kasem's Delight* 'The Deep', AM/AOS, you can note the best effects of *Vanda tricolor* on large modern hybrids. The flowers are large and rich purple, composed of a purple tessellation and spotting overlaid with a paler cast of color on the dorsal sepal and petals in the regions which normally would be clear pale color in *Vanda sanderiana*-type hybrids. In *Vanda Kasem's Delight* 'Triton's Treas-

ure', AM/AOS, the color and pattern are similar but lacking in textural depth, thus presenting a more "matte" appearance which many find quite pleasing. *Vanda Kasem's Delight* 'Tom Boykin', AM/AOS displays the same quality. Both of the latter clones have disrupted color patterns in the petals which appear as irregular, lighter areas in an otherwise uniform field of color. Whether this color break will come to be perceived as a major disqualifying fault, as it is in *Phalaenopsis* judging, remains to be seen.

*Vanda Kasem's Delight* appears to have been crossed more or less simultaneously with *Vanda Gordon Dillon* in both Florida and Thailand. The resulting hybrid, *Vanda Fuchs Delight*, appears in both blue-purple and pink forms. It is rapidly becoming the bench mark of modern vandas. The numerous pink forms will be discussed later. The blue-purple forms represent a significant advance in this line of breeding. *Vanda Fuchs Delight* 'Motes Orchids', HCC/AOS, which received its award last November, is exemplary of these new purples. The round, full-formed, heavy-substantiated flowers of this cultivar are larger than the similarly dark *Vanda Kasem's Delight*. Their petals are broad enough to per-



mit no "windows" and, because of their excellent texture, they also display the clearest purple color without dulling. The patterning is the best of both the *Vanda coerulea* ancestor's tessellations and the *Vanda tricolor* spotting. Having received some of the best from its *Vanda tricolor* ancestor, it also received some of the worst. The stems of this clone, like many others in this line of breeding, are short and the flowers are rather crowded. These faults, doubtless, prevented an otherwise superlative flower from attaining a higher award. Despite their shortcomings, the new generation of purples from the *Vanda* Gordon Dillon line are marvelously complex hybrids that have come a very long way from *Vanda coerulea*.

While the modern purple-blue vandas were being developed, interest in Thailand continued in *Vanda coerulea* and yet more improved forms have emerged. These, of course, have been bred to the best of the modern pinks and blues. The results have been extraordinary. A number of these primary *Vanda coerulea* hybrids have been awarded recently, reflecting a growing recognition of the superiority of this new generation of hybrids to the "old" *Vanda* Rothschildiana types. *Vanda* Rothschildiana, remade with improved parents, has itself received new recognition and other new hybrids of improved *Vanda coerulea* crossed with advanced Thai hybrids have taken numerous awards of late. Awarded clones of *Vanda* Suwapee, (*Bhimayothin* × *coerulea*), *Vanda* Motes Blue Centurion (*Motes Pioneer* × *coerulea*) and *Vanda* Keeree's

Blue (*Keeree* × *coerulea*) are indicative of this recent recognition.

Perhaps the most successful of these hybrids is *Vanda* Motes Indigo. Five clones of this grex have garnered AOS awards in the past two years. *Vanda* Motes Indigo exemplifies the best of the new hybrids. The flowers are large, measuring more than 6" across in the largest clones. Moreover, these can be remarkably full-formed flowers, many showing less "windowing" between the petals and dorsal sepal than appears in the more "advanced" hybrids of the previous generation, such as *Vanda* Kassem's Delight. Colors range from soft blue, as in 'Alice Blue', AM/AOS, through bright lavender-blue (e.g., 'Alice', HCC/AOS) to dark indigo blue (e.g., 'Mary Motes', HCC/AOS) to intense indigo ('Indigo', HCC/AOS). These plants are very floriferous, blooming frequently with immense inflorescences. 'Bart Motes', AM/AOS carried 56 flowers on a single branched inflorescence at its most recent flowering.



Among the newer *Vanda coerulea*-influenced hybrids is ***Vanda* Suwapee** (*Bhimayothin* × *coerulea*). The cultivar 'Limona' won a Highly Commended Certificate of 79 points from the American Orchid Society in 1982 when exhibited by Mr. & Mrs. John H. Naugle of Brandon, Florida.





One of the newest award-winning grexes involving a complex *Vanda* hybrid crossed back onto the species *Vanda coerulea* is **Vanda Motes Indigo** (Fuchs Delight  $\times$  *coerulea*). Thus far, it has garnered five quality awards from the American Orchid Society, including an Award of Merit of 80 points in 1987 to 'Bart Motes', shown above. The plant was grown by Motes Orchids of Homestead, Florida, and was photographed by Bob Smith.

Hybrids such as *Vanda Motes Indigo* are surely among the most spectacular orchids. They are an exciting improvement on a well-established standard type. But they are more. They carry the potential for whole new generations of improved vandas of the more standard *Vanda sanderiana* types. The qualities bred into vandas in the search for even darker colors (small size, short, weak stems, muddy color) are negatives that the new generation of *Vanda coerulea* hybrids can help to overcome. *Vanda Bangkok Blue*, a primary *Vanda coerulea* hybrid, contributed much of the positive qualities in *Vanda Gordon Dillon*, which has had such influence in modern breeding. *Vanda Motes Indigo* and the other new hybrids, when bred to modern hybrids such as *Vanda Fuchs Delight*, can be expected to produce a new generation of blue-purple *Vanda* hybrids which preserve the best of the dark

purples and overcome many of their faults.

We can expect dark, full-formed flowers on long stems with vivid, clear colors. Many of these precocious hybrids will carry many more and larger flowers and will flower more often. Unlike crosses between two complex hybrids, these new second-generation *Vanda coerulea* hybrids will possess greater consistency, yielding a high percentage of very desirable plants and few, if any, of the outrageous "dogs" which all too often result from a complex hybrid bred to a complex hybrid. We also can expect that these new hybrids will be sibling-crossed and that the new secondary hybrids again will be bred to yet further improved *Vanda coerulea* clones and to the best of the new siblings. Borrowing some of the best qualities of *Vanda tricolor* and *Vanda luzonica*, blue hybrids will continue to grow larger, fuller, darker and more floriferous. ■