

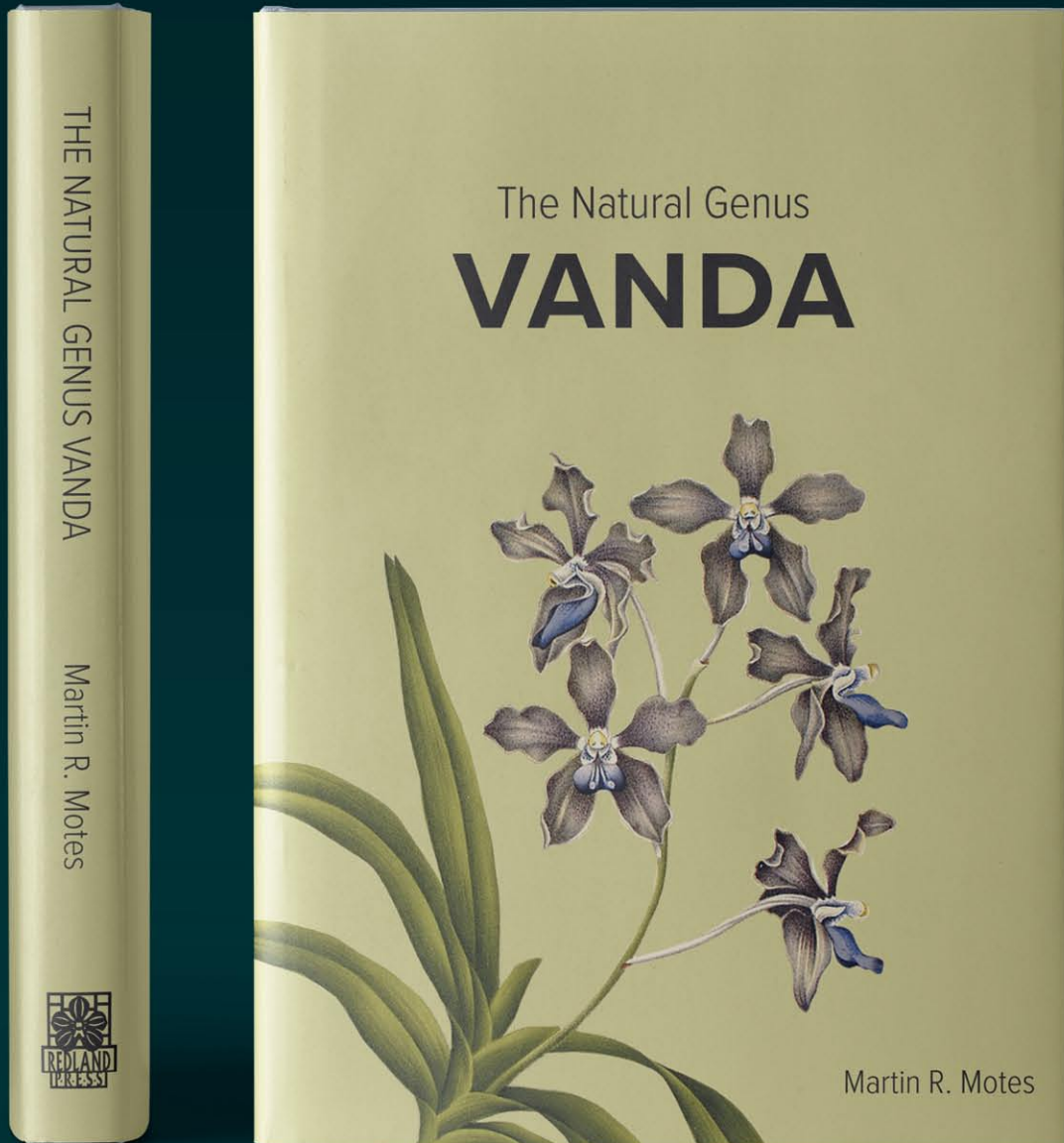
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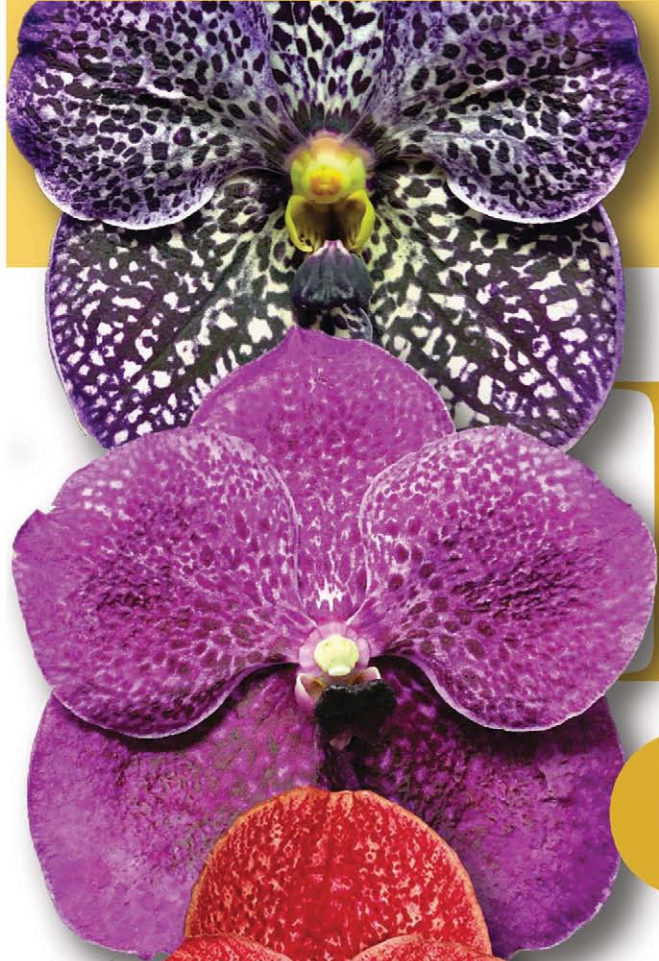
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THE EDITORIAL BOARD recognizes the generosity of growers and lovers of orchids for their contributions to this Supplemental Issue of *Orchids*. When we all work and join together, wonderful things such as this celebration of spots and stripes in the orchid world are possible. A special thanks to the authors and photographers who contributed their time and enthusiasm to this issue. — Jean Allen-Ikeson

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COVER

Vandaceous orchids come in all shapes, colors and sizes. When given appropriate conditions, plants are extremely floriferous and often make stunning specimens — even the little ones. Our cover subject is *Vanda ampullacea* 'Pink Glow' AM-CCE/AOS; grower: R.F. Orchids, Inc.; photographer; Greg Allikas

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Philippine *Renanthera* Species

BY JIM COOTES/PHOTOGRAPHS, UNLESS OTHERWISE CREDIT, ARE BY JIM COOTES

ONE OF THE most spectacular sights to behold, whether at an orchid society meeting or show, is a well-grown and well-flowered plant of *Renanthera storiei*. The mass flowering of the brilliant-red blooms is a real showstopper and a sight to be cherished forever.

The genus *Renanthera* was created by João Loureiro in 1790 in *Flora Cochinchinensis*. The generic name refers to the kidney-shaped pollinia of the type species, which, for this genus, is *Renanthera coccinea* Loureiro. Members of the genus can be found in eastern India, southern China, Hong Kong (but now extinct there), Myanmar, Thailand, Vietnam, Laos, Malaysia, Indonesia, New Guinea and the Solomon Islands. The Philippines has seven species, three of which are endemic, or found in no other country.

Renanthera breviflora (Reichenbach f.) R. Rice & J.J. Wood Section *Renanthera*

HABITAT AND DISTRIBUTION *Renanthera breviflora* has been recorded from Borneo (Sarawak and Sabah) and recently Sulawesi (Celebes). In the Philippines, it has been recorded from the islands of Leyte and Samar, in the Visayan Sea; the province of Davao Oriental on Mindanao; and the Sulu archipelago, southwest of Zamboanga province in Mindanao. It grows as an epiphyte, and in moderately shaded localities at elevations from 328 feet to about 1,969 feet (100–600 m) above sea level.

NOTES *Renanthera breviflora* is closely related to *Renanthera monachica*. The two can be readily separated by the shape of the petals, which in *Renanthera breviflora* are noticeably longer than the lateral sepals. The external surfaces of *Renanthera breviflora* are also covered with minute hairs.

GROWTH HABIT Monopodial, upright. **Stem** To 0.4 inch (1 cm) in diameter, reaching a length of about 3.3 feet (1 m). **Leaves** Leathery, oblong, to 6.1 inches long by 0.6 inch wide (15 × 1.5 cm), unequally bilobed at the tip. **Inflorescences** From opposite the leaf, sparsely branched, 1.6 feet (0.5 m) long, branches of a similar length, bearing many flowers about 1.6 inches (4 cm) in



diameter. **Flower color** Sepals and petals are yellow, marked with pale-red spots; labellum is yellow, red and white. **Dorsal sepal** Narrowly lanceolate, to 1.0 inch long by 0.16 inch (2.5 cm × 4 mm) wide. **Petals** Linear to narrowly lanceolate, to 1.0 inch long by 0.1 inch (2.5 cm × 2.5 mm) wide. **Lateral sepals** Narrowly elliptic, 0.9 inch by 0.2 inch (2.2 cm × 5 mm) wide; keeled at the apex. **Labellum** Small, fleshy, spurred, trilobed; side lobes broad rounded; midlobe strongly recurved, tongue-like.

Renanthera caloptera (Reichenbach f.) Schlechter

Professor Heinrich G. Reichenbach originally named this attractive species as *Saccolabium calopterum* in 1882 in *The Gardeners' Chronicle and Agricultural Gazette*. Alexander Kocyan and Andre Schuiteman transferred it to the genus *Renanthera* in *Phytotaxa* in 2014. The specific epithet is derived from two Greek words, “calo,” (“beautiful”) and “pteron” (“winged”), in reference to the beautifully colored flowers.

HABITAT AND DISTRIBUTION *Renanthera caloptera* has been recorded from Sulawesi (Celebes), throughout New Guinea, and Moluccas (Maluku). In the Philippines, it has been found on the southern island of Dinagat, near Mindanao, but I suspect it is more widely



[1] Two different clones of *Renanthera breviflora* photographed by the author.

[2] *Renanthera caloptera* photographed by Ronny Boos. The inset photograph by Jim Cootes clearly shows the enlarged blunt spur of this species.

distributed. It grows as an epiphyte at elevations of up to 984 feet (300 m) above sea level.

NOTES The late Dr. Eric Christenson believed this species is pollinated by birds. The bright color of the flowers, the leathery leaves and the exposed habitat of the plant, which is chiefly on the trunks of trees, are all factors for bird pollination. In the past, this orchid was also known as *Ascoglossum calopteryx* (Reichenbach f.) Schlechter.

GROWTH HABIT Monopodial, upright. *Leaves* Rigid and thick, about 7.9 inches long by 1.0 inch wide (20 × 2.5 cm). *Inflorescences* Upright and branching readily. Flowers are about 0.5 inch (1.2 cm) across the petals by 0.8 inch (2 cm) high. There can be 60–80 blooms per raceme and on a large and healthy plant, there can be several inflorescences.

Flower color Varying shades of purple. *Dorsal sepal* Oblanceolate, up to 0.3 inch long by 0.12 inch wide (7 × 3 mm). *Petals* Lanceolate, up to 0.3 inch long by 0.16 inch wide (8 × 4 mm), all segments reflex. *Lateral sepals* Spatulate, about 0.5 inch long by 0.16 inch wide (12 × 4 mm). *Labellum* Small, attached immovably to a spur, which is straight, about 0.4 inch long by 0.1 inch in diameter (1 cm × 2 mm).

Renanthera cornuta R. Rice. Section: *Verrucosa* R. Rice

Rod Rice named this species in 2018 in his *Photo Intro to: Vandoid Orchid Genera in Asia (Revised Edition)*. The specific epithet refers to the small, horn-like apices to the floral segments.

HABITAT AND DISTRIBUTION *Renanthera cornuta* is endemic to the Philippines and has been found in the provinces of Davao, Surigao and Zamboanga on Mindanao. It usually grows as an epiphyte at low elevations.

GROWTH HABIT Monopodial, upright; stem can reach lengths of up to 36 inches tall by 0.4 inch in diameter (90 cm × 9 mm). *Roots* Verrucose (bearing small wart-like projections). *Leaves* Linear, stiff, and leathery, up to 6.3 inches long by 0.7 inch wide by about 0.12 inch thick (16 cm × 1.8 cm × 3 mm), unequally bilobed at the tip. *Inflorescences* Semipendulous to erect, branching and can carry up to 30 flowers about 2 inches (5 cm) in diameter, which open in succession. *Flower color* Reddish orange, spotted and blotched with red. *Dorsal sepal* Lanceolate, acute, up to 1.2 inches long by 0.25 inch wide (3 cm × 6 mm). *Petals* Lanceolate, acute, up to 1.0 inch long by 0.14 inch wide (2.5 cm × 3.5



mm). *Lateral sepals* Ovate-lanceolate, acuminate, to 1.14 inches long by 0.3 inch wide (2.9 cm × 8 mm), edges strongly undulate. *Labellum* Trilobed, side lobes 0.08 inch long (2 mm), truncate; midlobe elliptic, recurved, about 0.08 inch long (2 mm). *Spur* Cylindric, obtuse, 0.12 inch long by 0.08 inch in diameter (3 × 2 mm).

Renanthera elongata (Blume) Lindley. Section: *Renanthera*

Dr. Carl Ludwig von Blume first named this plant in 1825 as *Aerides elongatum*. Dr. John Lindley transferred the generic name to *Renanthera* in 1833 in his *Genera and Species of Orchidaceous Plants*. The specific epithet refers to the elongated stems of this species.

HABITAT AND DISTRIBUTION *Renanthera elongata* is a widely distributed species that has been found in Thailand, Peninsular Malaysia, Singapore, Sumatra, Java, Mentawi and Borneo. In the Philippines, it has been recorded from the province of Zamboanga on Mindanao. It grows as an epiphyte, sometimes on mangroves; always in brightly lit localities at elevations from sea level up to about 3,281 feet (1,000 m) above sea level.

GROWTH HABIT Monopodial, upright. *Stem* To 0.4 inch (1 cm) in diameter, reaching lengths of 9–10 feet (about 3 m). *Leaves* Leathery, oblong, to 4.7 inches long by 1 inch wide (12 × 2.5 cm), unequally bilobed at the tip. *Inflorescences* From opposite the leaf, branched, to 1.6 feet long (0.5 m), branches to 5.9 inches long (15 cm), bearing many flowers about 0.4 inch (1.1 cm) in diameter. *Flower color* Bright red, yellow markings on the labellum. *Dorsal*



sepal Oblong to lanceolate, to 0.28 inch long by 0.12 inch wide (7 × 3 mm). *Petals* Oblong to lanceolate, to 0.28 inch long by 0.1 inch wide (7 × 2.5 mm). *Lateral sepals* Spatulate, 0.28 inch long by 0.12 inch wide (7 × 3 mm). *Labellum* Small, fleshy, spurred, trilobed, side lobes triangular, midlobe recurved, triangular.

Renanthera monachica Ames. Section: *Verrucosa* R. Rice

Professor Oakes Ames named this beautiful species in 1915 in his *Studies in the Family Orchidaceae* — Fascicle V. The specific epithet means a fanciful resemblance to a Spanish dancing girl. Mr. H.M. Curran collected the type specimens in the province of Zambales, Luzon. The specimen first flowered under cultivation in February 1908.

HABITAT AND DISTRIBUTION *Renanthera monachica* is endemic to the Philippines where it is found in the provinces of Quezon, Rizal and Zambales on Luzon, and the provinces of Sarangani and Surigao on Mindanao. It usually grows as an epiphyte at elevations of up to 1,640 feet (500 m) above sea level.

GROWTH HABIT Monopodial, upright. *Roots* Verrucose (bearing small wart-like projections). *Leaves* Stiff and leathery, about 6 inches long by 0.4 inch wide by about 0.12 inch thick (15 cm × 1 cm × 3 mm). They have a purplish tinge to them. *Inflorescences* Semipendulous, branching and can carry up to 50 flowers, about 1.6 inches (4 cm) in diameter. *Flower color* Orange, spotted with red. *Sepals* Lanceolate, up to 0.8 inch long by 0.2 inch wide (2 cm × 5 mm). *Petals* Lanceolate, up to 0.6 inch long

COOTES

by 0.12 inch wide (1.5 cm × 3 mm). *Labellum* Trilobed, lateral lobes upright, midlobe small almost circular.

Renanthera philippinensis Ames & Quisumbing. Section: *Renanthera*

Professor Oakes Ames and Dr. Eduardo Quisumbing named this glorious species in 1950 in the *Philippine Orchid Review*. The specific epithet refers to this plant's country of origin — the Philippines.

HABITAT AND DISTRIBUTION *Renanthera philippinensis* is endemic to the Philippines and has been found in the provinces of Bataan, Cagayan, Camarines, the Mountain Province, Quezon and Rizal on Luzon; the southwestern island of Palawan; the islands of Leyte and Samar in the Visayan Sea; the island of Dinagat; and the provinces of Agusan and Surigao on Mindanao. It normally grows as an epiphyte in mangrove swamps, which makes the collection from the Mountain Province a little doubtful, as this province is totally landlocked.

NOTES This species was first described as a variety of *Renanthera storiei* in 1932, but *Renanthera philippinensis* differs by its smaller stature, smaller leaves, smaller flowers and the narrower, broadly truncated lateral lobes of the labellum.

GROWTH HABIT Monopodial, upright to semipendulous. *Leaves* Leathery, up to 4 inches long by 1.6 inches wide (10 × 4 cm), unequally lobed at the apex. *Inflorescences* Branching, bearing many flowers up to 1 inch (2.5 cm) across the lateral sepals. *Flower color* Bright red to orange; labellum is red, white and yellow; column red; anther cap red with a white vertical stripe. *Dorsal sepal* Narrowly oblanceolate, up to 0.8 inch long by 0.2 inch wide (2 cm × 5.5 mm). *Petals* Narrowly oblanceolate, up to 0.7 inch long by 0.2 inch wide (1.8 cm × 5 mm). *Lateral sepals* Oblanceolate, up to 1.2 inches long by 0.4 inch wide (2.9 × 1.1 cm). *Labellum* Trilobed, lateral lobes squarish, upright; midlobe ovate; small spur.

Renanthera storiei Reichenbach f. Section: *Renanthera*

Professor Heinrich G. Reichenbach named this plant in 1880 in the *Gardeners' Chronicle and Agricultural Gazette*. The specific epithet honors Mr. James Storie, who was the first person to flower this species outside of the Philippines.

HABITAT AND DISTRIBUTION *Renanthera storiei* is endemic to the Philippines where it is found in the provinces of Bataan, Camarines, the Mountain Province, Rizal, Sorsogon and Zambales



5



6



7

- [3] *Renanthera cornuta* photographed by Ed de Vogel.
- [4] *Renanthera elongata* photographed by Ed de Vogel.
- [5] *Renanthera monachica* photographed by the author.
- [6] *Renanthera philippinense* grows high in exposed trees. Photograph on the island of Samar.
- [7] Close-up by the author of a single flower of *Renanthera philippinense*.





on Luzon; the southwestern island of Palawan; the islands of Leyte and Samar in the Visayan Sea; the islands of Dinagat and Siargao; and the provinces of Agusan and Surigao on Mindanao. It grows in bright light usually as an epiphyte at elevations of up to 3,281 feet (1,000 m) above sea level.

GROWTH HABIT Monopodial, upright to scrambling. This plant can grow to be 13 feet (4 m) long. **Leaves** Leathery, about 4.7 inches long by 1.2 inches wide (12 × 3 cm). **Inflorescences** Semipendulous, branch freely and can carry up to 100 blooms, which are about 2.4 inches (6 cm) in diameter and showy. **Flower color** Bright red. **Dorsal sepal** Linear, up to 1 inch high by 2 inches wide (2.5 × 5 cm). **Petals** Of similar size and shape as the dorsal sepal. **Lateral sepals** Spatulate, up to 1.4 inches long by 0.5 inch wide (3.5 × 1.2 cm). **Labellum** Trilobed, lateral lobes upright, midlobe is small and oblong.

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— Jim Cootes, 7 Bronte Place, Woodbine NSW, Australia 2560 (email: jimcootes@gmail.com).

[8] *Renanthera philippinense* photographed by the author.

[9] *Renanthera storiei* photographed by Dr. Miguel David De Leon.

[10] *Renanthera storiei* photographed in situ by Dr. Miguel David De Leon.

Rhynchosstylis Blume 1825

The Species and
Their Influence in
Hybridizing

BY PATRICK VUURMAN



SUBFAMILY Epidendroideae
 TRIBE Vandaeae
 SUBTRIBE Aeridinae.

THE GENUS *RHYNCHOSTYLIS* is a branch of the Vandaeae Tribe with three generally accepted species, two subspecies and two new species. While working for Leiden University in the Netherlands in 1825, Karl Ludwig Blume created the genus, naming the type species *Rhynchostylis retusa*. *Rhynchostylis* is derived from the Greek words “rhynchos” meaning “beak” and “stylis” meaning “column,” referring to the bird-like appearance of the apex of the column of the flower. Carl Linnaeus was the first to publish a reference to these plants in 1753 in his monumental work *Species Plantarum*, using the name *Epidendrum retusum*.

Although the flowers are similar, the distinguishing feature that separates *Rhynchostylis* species from other Vandaeae is their single-lobed lip (lacking side lobes). Plants have inflorescences that generally open simultaneously, which are multiflowered with evenly spaced, spirally arranged flowers on arched-to-pendulous inflorescences. *Rhynchostylis* species were native in numerous areas throughout many parts of Southeast Asia from India to the Philippines. All but the most recently described species are pleasingly fragrant. Personal observation suggests this characteristic is passed on to the offspring, often beyond the first generation.

Rhynchostylis retusa (L.) Blume 1825, the type species, originates from Sri Lanka through India, eastward through Myanmar and Indochina into southwest Yunnan Province in China. Distribution continues eastward through the Philippines and southward through Malaya, Sumatra, Java, the Kangean Archipelago, just off the northeast coast of Java and possibly into Borneo. Plants are epiphytic, growing on the main branches of deciduous trees between sea level and 3,900 feet (1,200 m). They are robust to 24 inches (60 cm) tall with strap leaves up to 20 inches (50 cm) long by 4 inches (10 cm) wide, arranged closely together, alternately along the stem, keeled and obliquely bilobed apically. Inflorescences usually arise upward from leaf axils sometime from midwinter through midsummer, often several at once on mature plants, then arch downward with the up to 150 flowers on the downward portion. Flowers are evenly spaced and spirally arranged around the stem, are about 1 × 1 inch (2.5 × 2.5 cm), relatively flat, round



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and full with firm-to-heavy substance, usually with a bright-white base color and more or less densely spotted amethyst segments. The midlobe of the forward-facing outer half of the lip is usually a varying shade of amethyst. Flower color can vary from a true alba form to having nearly solid, red-purple blotches. Flowers are pleasingly fragrant.

Rhynchostylis retusa appears only briefly in the hybrid register as it is not a significant parent in vandaceous breeding. Flower color and shape is carried through to the progeny, including the tendency for disproportionate segments and twisting forward of the petals as seen in *Rhynchostylis retusa* ‘Crownfox Delicado’

[1] *Rhynchostylis retusa* ‘Waterfield’ HCC/AOS; exhibitor: Norman Mizuno; photographer: Glen Barfield.

[2] *Rhynchostylis retusa* ‘Charlie’ AM/AOS; exhibitor: Alan Del Castillo;

AM/AOS (Fuchs, 2006).

Rhynchostylis coelestis (Rchb. f.) Rchb. f. ex Veitch 1891 was originally published as *Saccolabium coeleste* Rchb. f. The name refers to the “sky-blue” color in the flowers. There is an earlier mention of a plant collected in southern Cambodia, calling it *Vanda pseudocaerulescens*. This species is distributed through many parts of Thailand, Cambodia and Vietnam and

can be found growing epiphytically on main branches of deciduous trees from sea level to 2,300 feet (700 m). Plants are somewhat smaller than *Rhy. retusa*, have a similar structure and growth and flowering habit, but unlike *Rhy. retusa*, inflorescences arise upward with up to 60 flowers of about 1.2 × 1 inch (3 × 2.5 cm). Color varies considerably from a true alba through light suffusions of lavender and amethyst, more concentrated towards the rim of the flowers. The outer half of the lip is mostly a solid color in a deeper shade. This species imparts cool tolerance and fragrant flowers to its offspring at least into the first generation.

Rhynchostylis coelestis is a far more productive parent than the other species. The color form used as a parent is a significant factor in the flower color of the offspring. The common form, white with white to varying depths of color suffusion towards the outer edges of sepals and petals and solid-colored lip, is dominant. The pure-white grex is used when other color patterns are desired (Fuchs 2006).

Rhynchostylis gigantea (Lindley) Ridley 1896, originally published as *Saccolabium giganteum* Lindley 1833, as the name implies, is a larger plant than *Rhy. retusa*. *Rhynchostylis gigantea* is widely distributed in its natural habitat from Myanmar throughout Indochina as far north as Hainan Province in China and eastward to the Philippines and Borneo. Generally epiphytic, the plants grow on the main branches of deciduous trees from sea level to 2,300 feet (700 m). The extensive distribution of the species is thought to be responsible for the significant color variation from a true alba to a solidly saturated, deep purple of the so-called “Sagarik” strain. Typical flowers are bright white with more or less densely blotched magenta, and about 40 flowers occur all around the pendent portion of the inflorescence. Exceptional clones can exceed 70 flowers per inflorescence and will have several inflorescences on a well-grown, mature plant having multiple keikis. Flowers can be up to 1.6 inches (4 × 4 cm) in size and are pleasingly fragrant. Tetraploid examples exist and are extensively used in hybridizing, notably the Sagarik strain (2N = 38).

To growers, *Rhynchostylis gigantea* is probably the most familiar species in this genus. Long-lasting white flowers with varying degrees of spots from pure white to heavy suffusion of color on sturdy plants make this species attractive to hybridizers. *Rhynchostylis gigantea* progeny tend to inherit its slow growth

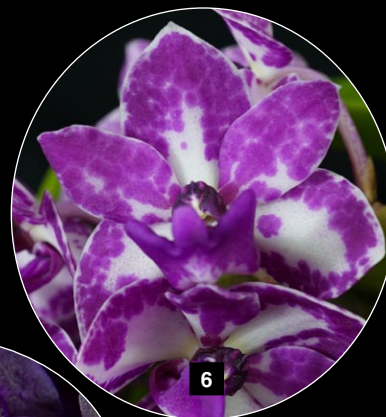


pattern, taking several years to mature, and the large plant size of the other parent. This is a considerable commitment while awaiting the potential success of achieving an improved strain — always a major concern in a competitive market. White strains often enhance the color of the other parent in offspring and the Sagarik strain color is strongly dominant (Fuchs 2006).

OTHER DEBATED SPECIES *Rhynchostylis violacea* Rchb.f. 1854 was named as an allusion to the flower color. A native of the Philippines, florally it most resembles *Rhy. gigantea* while vegetatively it is more like *Rhy. retusa*. In 1985, Eric Christenson reduced *Rhy. violacea* to a subspecies of *Rhy. gigantea* necessitating the subspecies

[3] *Rhynchostylis coelestis* is naturally found in a number of color forms. The specimen pictured is ‘Lauretta’ CCM/AOS; exhibitor: Stuart Fraser (photographer: Jim Tear); upper inset is ‘Julien Baruch’ AM/AOS, an excellent example of the white form; exhibitor: Krull-Smith (photographer: Wes Newton); middle inset is ‘Krull’s Stella’ AM/AOS, one of the fuchsia forms; exhibitor: Krull-Smith (photographer: Wes Newton) and the lower inset, ‘Karina Schmid Lucioni’ AM/AOS is an example of the pink forms; exhibitor: Motes Orchids, Inc. (photographer: Greg Allikas).

RHYNCHOSTYLIS GIGANTEA



- [4–5] *Rhynchostylis gigantea* AM-CCM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [6] *Rhynchostylis gigantea* 'Krull's Boon Bryson' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [7] *Rhynchostylis gigantea* 'Ann Krull' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [8] *Rhynchostylis gigantea* 'Krull's Mammoth' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [9] *Rhynchostylis gigantea* 'Orange Star' AM/AOS; exhibitor: Maria Vittiglio; photographer: Greg Allikas.
- [10] *Rhynchostylis gigantea* 'Crownfox Confetti' FCC/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski.
- [11] *Rhynchostylis gigantea* 'Frank Smith' FCC-CCM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [12] *Rhynchostylis gigantea* 'Krull's Frosted Peach' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [13] *Rhynchostylis gigantea* 'Krull's Lavender and Lace' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [14] *Rhynchostylis gigantea* 'Florida Rose' AM/AOS; exhibitor: Krull-Smith; photographer: Wes Newton.
- [15] *Rhynchostylis gigantea* 'Anror' AM/AOS; exhibitor: Andrea Davidson; photographer: Claude W. Hamilton.

Rhynchostylis gigantea subsp. *gigantea* (Lindl.) Christenson 1985. Although this has been accepted by the World Checklist of Selected Plant Families, it has not been widely adopted. For example, the Royal Horticultural Society (RHS) International Orchid Registry continues to hold *Rhy. violacea* as a valid species for hybrid registration. Another anomaly is the publication of *Rhynchostylis rieferi* Higgins 2013. It has no mention on the RHS Orchid Hybrid Registry as of last check, although the species has been accepted by the World Checklist of Selected Plant Families. This species is described by Higgins (2012):

“Found only in the Philippines as a small sized, hot growing epiphyte with glabrous, coriaceous sessile, coriaceous, distichous, linear, conduplicate, sub-oblique, retuse, apiculate leaves that blooms in the summer on an axillary, pendulous, to 14.4” [36 cm] long, densely many flowered inflorescence carrying fragrant flowers with a minutely three lobed lip with spreading side lobes and a straight truncate spur,... Distinguished from other *Rhynchostylis* by the sub-oblique leaf tips with the central vein extending into a small sharp, acute point and smaller flowers. The labellum is narrow with a small sharp upturned and hook-like apicule at the apex and the mentum or spur has a distinct shape.”

In 2018, a new species was added to the genus *Rhynchostylis*, namely *Rhynchostylis cymifera* Yohannan, J. Mathew & Szlach. This species although similar to *Rhy. retusa*, is easily distinguished by its odorless flowers that start opening from the apex of the flower stem (cymose). Plants are found only in the Nilambur, a small area of southwestern India at around 3,900 feet (1,200 m) above sea level, indicating a less-hot growing environment.

RHYNCHOSTYLIS INTRAGENERIC HYBRIDS With so few species recognized by the World Checklist of Selected Plant Families until relatively recently, the opportunity to hybridize within the genus *Rhynchostylis* is limited. The earliest was registered in 1970 to *Rhynchostylis* Chorchalood (*gigantea* × *retusa*), which has a total of seven AOS awards “yet it is not a significant parent in vandaceous intergeneric pedigrees” (Fuchs 2006). Of those awarded since 2000, three are for superior culture and two for flower quality. The respective parents have an average of 44 and 180 flowers and buds per inflorescence. *Rhynchostylis* Chorchalood, averaging



GREG ALLIKAS

65 flowers and buds with flowers 1.3 × 0.8 inches (3.2 × 2.1 cm), is somewhat below the mean of 89 flowers and 1.2 × 1.1 inches (3.0 × 2.8 cm) of its parents. Further breeding with this grex has led to five registered offspring, none of which has received an AOS award. *Rhynchostylis* Mary Motes (*coelestis* × *retusa*) 1989 has no AOS awards and no progeny.

Rhynchostylis White Cloud (*coelestis* × *gigantea*) was not registered until 2017 by R.F. Orchids! It has not yet received an AOS award. It has only two registered offspring, one of which with *Vanda* Bangkhuntian Gold produced *Vandachostylis* Laura Newton, and the other with *Vanda* Yip Sum Wah produced *Vandachostylis* Sweet Athena, both registered in 2017. *Vandachostylis* Laura Newton ‘Canary’ received an 85-point AM/AOS with 19 flowers that were 2 × 2 inches (5 × 5 cm) and 10 buds on one inflorescence — a pleasingly larger-flowered grex with about the expected number of flowers and buds when compared to its parents. *Vandachostylis* Sweet Athena has yet to receive AOS award recognition.

INTERGENERIC PRIMARY HYBRIDS Within the *Vanda* alliance more than 15,000 registered hybrids have been made that included *Rhynchostylis* background, excluding *Phalaenopsis* hybrids. In excess of 800 have a *Rhynchostylis* species as a direct parent. About two-thirds of them have a *Vanda* hybrid as the other parent giving rise to the genus *Vandachostylis*. There will be many more when all hybrids using the former genus *Neofinetia* are finished being transferred to *Vanda*. The next-most-used genus is *Phalaenopsis*, with nearly 50 offspring classed as *Rhynchonopsis*



ALBERTO RODRIGUEZ

[16] *Rhynchostylis* Chorchalood ‘Sweet Martha’ AM/AOS; exhibitor: Thomas G. Coffey.

[17] *Vandachostylis* Laura Newton ‘Canary’ AM/AOS; exhibitor: R.F. Orchids, Inc.

(*Rhynchostylis* × *Phalaenopsis*).

Introduction of a plethora of other genera into intergeneric hybridizing has led to numerous new genus names, some with as many as six genera in their background. The panoply of genera with numbers of offspring having a *Rhynchostylis* as the other parent includes, among others, *Acampe*, *Aerides*, *Arachnis*, *Cleisocentron*, *Esmeralda*, *Holcoglossum*, *Luisia*, *Papilionanthe*, *Paraphalaenopsis*, *Pelatantheria*, *Renanthera*, *Robiquetia*, *Sarcochilus*, *Seidenfadenia*, *Trichoglottis* and *Vandopsis*. Many others within the *Vanda* alliance have also been hybridized with *Rhynchostylis*, most of these with only one registered offspring but no further progeny and no AOS awards indicative of insufficient merit-worthy “improvement.” A frequent problem is lack of seed viability — there may be solutions to this problem (outlined as follows) where possible outcomes warrant the effort.

Introduction of *Rhynchostylis* into *Vanda* Alliance breeding intends that a number of their positive features carry through into the progeny. Ideally, the primary objective is to improve the offspring with all the positive *Rhynchostylis* traits and reduce the influence of the negative, aiming for the following:

- increased floriferousness
- densely arranged, well-spaced flowers all along the flower stem (cylindrically in *Rhynchostylis*)

- lengthened flower stem (flowers held above the leaves in *Rhynchostylis*)
- simultaneously opening flowers
- wider color range using alba forms; deepened saturation and brighter color when using highly colored forms of *Rhynchostylis*.

- shortened plant stature (*Rhynchostylis* is wider than high) with a relatively short, sparse thick root structure arising further along the stem up to midheight

- lower light intensity and temperature requirements

- flower fragrance (an added bonus)

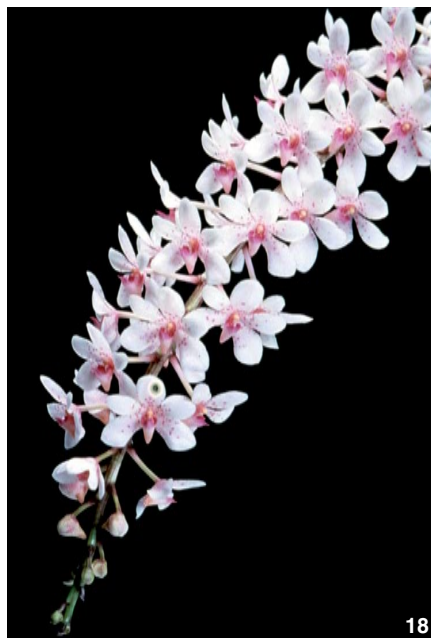
Of 100 or so registered primary intergeneric hybrids involving *Rhynchostylis*, relatively few have been awarded and even fewer have offspring. A selection of the most awarded for each species follows.

RHYNCHOSTYLIS RETUSA HYBRIDS *Sartylis* Blue Knob 'TJ' HCC/AOC (*Sarcochilus hartmannii* × *Rhy. retusa*) was awarded with 37 flowers, which were 1 × 1 inch (2.6 × 2.6 cm), and four buds on a single inflorescence exhibiting flower conformation and habit midway between the parents with somewhat fewer but larger flowers than the parental mean. Flowers inherited color and lip shape from the *Rhynchostylis* with sepal and petal shape and their overlapping equilateral triangle orientation from the *Sarcochilus* parent.

Vandachostylis Lady Padriew (*Vanda vietnamica* × *Rhy. retusa*) 2012 is a relatively recent registration illustrating the inheritance of *Rhynchostylis* flower shape but with some opening up of the lip. Other cultivars of this grex show more or less color, particularly in the lip — again from the *Rhynchostylis* parent.

RHYNCHOSTYLIS COELESTIS HYBRIDS *Vandachostylis* Lou Sneary is a successful hybrid with 27 AOS awards and over 29 offspring. Flowers inherit strong tendencies toward the *Vanda* (*Neofinetia*) parent for segment proportions and swept-back sepals, characteristics that are often carried into subsequent generations of hybrids. The mentum in *Rhynchostylis* is elongated into a medium-sized nectary inherited from the *Vanda* (*Neofinetia*) parent. Flattened flowers well spaced along the stem, flower color — particularly in the lip, — sepal and petal width increases and lip shape are from the *Rhynchostylis* parent. Plant habit tends to the *Vanda* (*Neofinetia*) parent as does its reduction in size.

Vandachostylis Lou Sneary 'Robert' AM/AOS was awarded with 40 flowers,



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RONALD USERY



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JOHN KRAMER



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CRAIG FLAHR



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IRMA SALDANA



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WES NEWTON

- [18] *Sartylis* Blue Knob 'Rose Amethyst' AM/AOS; exhibitor: Breckenridge Orchids.
- [19] *Vandachostylis* Lou Sneary 'Robert' AM/AOS; exhibitor: R.F. Orchids, Inc.
- [20] *Vandachostylis* Thai Noi 'Potsy's Violetta' AM-CCM/AOS; exhibitor: Ray and Annette Potts.
- [21] *Perreiraara* Bangkok Sunset 'Honey Bee' AM/AOS; exhibitor: Carmen Maria Pérez.
- [22] *Vandachostylis* Sri-Siam 'Garrett's Grapeade' AM/AOS; exhibitor: Sharon and David Garrett.

which were 1.0 × 0.8 inch (2.5 × 2.1 cm) on one inflorescence. This particular plant shows unusual segment size and flower orientation, improvements for the grex. *Vandachostylis* Thai Noi 'Potsy's Violetta' AM-CCE/AOS, 81–91 points (*Rhy. coelestis* × *Vandaflabellata*) inherits the exaggerated lip (but flattened by *Rhynchostylis*) as well as its floriferousness. Thai Noi has several awarded progeny including *Perreiraara* Bangkok Sunset. *Vanda flabellata* has disproportionately small petals and a large lip and spur.

RHYNCHOSTYLIS GIGANTEA HYBRIDS *Vandachostylis* Sri-Siam (*Vanda tessellata* × *Rhy. gigantea*) clearly inherits the heavier substance and smoother edges of its *Rhynchostylis* parent and flattened flowers. The usual dominance for lip shape has been lessened.

Renanstylis Queen Emma 'Nuccio's Reward' HCC-CCM/AOS (*Renanthera storiei* × *Rhy. gigantea*) was awarded with 175 flowers, which had a natural spread of 2 × 2.4 inches (5.0 × 6.0 cm), and 149 buds on four inflorescences. The expected number of flowers is larger than average with the hoped-for red from the *Renanthera* parent's influence. The less desirable flower form is inherited from the *Renanthera* parent, and the branching habit of its flower stem was not achieved. Even the usually dominant *Rhynchostylis* lip form is less evident. Plants are large and slow to mature from both parents. Further breeding from this line was discontinued after only one generation as it has shown continued evidence of several of these less attractive features.

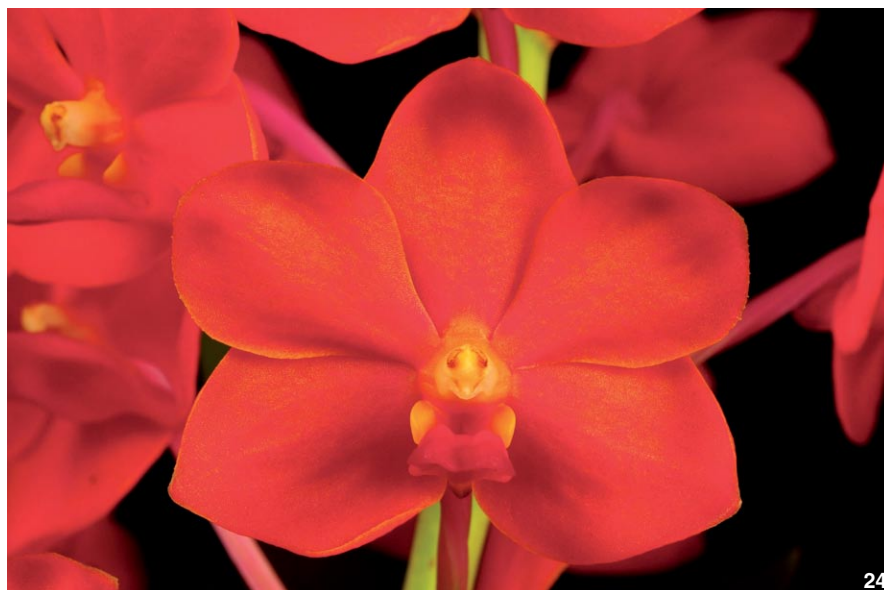
INTERGENERIC NONPRIMARY HYBRIDS Long-held hybridizing standards broadly set in England in the 19th century have given strong preference to plants with large, colorful flowers with a round, flat shape. These aims were first applied to the *Vanda* tribe on a larger scale in the mid-20th century in Hawaii and later in Thailand. To this end, efforts have been dominated by *Vanda sanderiana* and *Vanda coerulea*, which have approximately triple the number of registered direct offspring of the next-most-used *Vanda* species.

The marriage of these two species, *Vanda Rothschildiana*, registered in 1931, almost completely counterbalances the shortcomings in the flowers of the parents. An important added advantage of the hybrid vigor introduced into the offspring is a cooler temperature tolerance.

When vandas from the former genus *Ascocentrum* are in the parentage, plants and flowers closely resemble *Ascocentrum*



ROB HALGREN



MARCUS VALENTINE

with similar but more numerous flowers spread more evenly and with less crowding all around a longer flower stem. When non-alba forms of *Rhy. coelestis* are used, the flowers often have a downward "nodding" stance. *Rhynchostylis* is also dominant for lip color.

Of the approximately 100 *Vandachostylis* hybrids with a *Rhynchostylis* species as a direct parent, nearly half are with *Rhy. gigantea*, a third are with *Rhy. coelestis* with the remainder using *Rhy. retusa*. When considering all the approximately 800 progeny, over two-thirds have a *Rhy. coelestis* background while a quarter have *Rhy. gigantea* and the relatively few remaining use *Rhy. retusa*. One factor suggested for lack of success has been low fertility.

All species of *Rhynchostylis*, like the majority of the *Vanda* alliance, have a diploid number of chromosomes:

2N = 38. Aneuploids (odd numbers of chromosomes) are rare or nonexistent. A few tetraploids (2N = 76) and hexaploids (2N = 84) have been recorded but such polyploid plants must be considered horticultural variants and not truly representative of the species.

Tetraploids should be of particular value in intergeneric hybridization. While hybrid sterility is a common feature among diploid intergeneric hybrids, tetraploid hybrids involving two tetraploid species may be fertile. Such tetraploid intergeneric hybrids may possibly circumvent the frequent sterility barrier of intergeneric hybrids and open new avenues for producing multiple species combinations (Kamemoto et al. 1962)

Since some plants produce shorter pollen tubes, doing the reciprocal cross could improve fertility — perhaps at the cost of some of the desirable traits

inherited through the mitochondrial DNA contributed by the pod parent.

Vandachostylis Pine Rivers is a cross of *Vanda* Peggy Foo and *Rhynchostylis coelestis*. *Vanda* Peggy Foo has half its background from *Vanda* (*Ascocentrum*) *curvifolia* and most of the remainder from *V. sanderiana* and *V. coerulea* with color range from brilliant red through deep violet. The clone 'Pottsy's Cherry Jubilee' AM-CCM/AOS, 87–88 points, shows the heavy influence of its *Rhynchostylis* parent and *Ascocentrum* grandparent in floriferousness, flower form and arrangement along the upright stem. Cultivars of Pine Rivers have a color range from scarlet through fuchsia to blue violet with some showing tessellation. Many positive characteristics are inherited by its 20 next-generation offspring.

Vandachostylis Colmarie 'Valley Isle' AM/AOS, 85 points (Sri-Siam × *Rhy. gigantea*) has a *V. tessellata* grandparent. Colmarie is a ¾ *Rhy. gigantea* hybrid using the "Sagarik" strain and thus inheriting its deeply suffused color and lip form, but has flatter flowers with petal size closer to that of the sepals. Most of these characteristics are brought forward into offspring up to the next five generations.

Vandachostylis Walnut Valley Island Sun 'Bryon' HCC/AOS, 79 points (Lou Sneary × Colmarie) shows the *V. falcata* influence on color density and the mentum–nectary (0.6 in [1.5 cm]); both *V. falcata* and *V. tessellata* influence the lateral sepal shape even after two or three generations despite more than half the background being *Rhynchostylis*.

Perreiraara Bangkok Sunset 'Karina' AM/AOS (*Vandachostylis* Thai Noi × *Aerides houlletiana*) shows a *V. flabellata*-like lip and spur shape despite the usually dominant *Rhy. coelestis* influence while retaining its upright flower-stem stance. Bangkok Sunset is an important parent with 18 registered offspring, most displaying flat flowers with proportional segments and porrect lip.

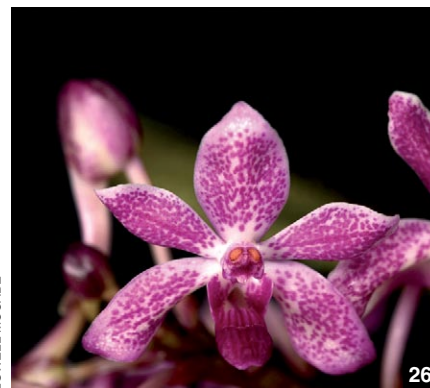
FURTHER FIRST GENERATION RHYNCHOSTYLIS OFFSPRING

Vandachostylis Blue Fairy (*Vanda* Meda Arnold × *Rhy. coelestis*) has outward-facing flowers and an upright flower stem inherited from the pod parent. Although the name suggests blue flowers, some are carmine red or purple but often with bluish tones as veins or overlays.

Vandachostylis Buster Brown 'Tanzanite' AM/AOS (*Vanda* Laksi × *Rhy. coelestis*) has the expected number of flowers that are considerably larger than the mean of its parents. The dark-colored



MICHAEL BLIETZ
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LOWELL MCCABE



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GARY ATKINS
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KAY CLARK



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JAMES MCCULLOCH
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[23] *Renanstylis* Queen Emma 'Nuccio's Reward' CCM/AOS; exhibitor: Tony Nuccio.

[24] *Vandachostylis* Pine Rivers 'Potty's Cherry Jubilee' AM/AOS; exhibitor: Ray and Annette Potts.

[25] *Vandachostylis* Colmarie 'Valley Isle' AM/AOS; exhibitor: Chuck Briggs.

[26] *Vandachostylis* Walnut Valley Island Sun 'Bryon' HCC/AOS; exhibitor: Bryon K. Rinke.

[27] *Vandachostylis* Blue Fairy 'Lambchop' AM/AOS; exhibitor: Mikie Emerson.

[28] *Vandachostylis* Blue Fairy 'Janis Dark Pink' HCC/AOS; exhibitor: Chad Whetstone.

[29] *Vandachostylis* Buster Brown 'Tanzanite' AM/AOS; exhibitor: Dixie McCulloch.

[30] *Vandachostylis* Viboon Velvet 'Memoria Doug Schneebeck' AM/AOS; exhibitor: Nancy Mountford.



JULIE ROTRAMEL
30

lip is a *Rhynchostylis* shape but reduced in size.

Vandachostylis Ispbell's Burnished Gold 'Duff' HCC/AOC (*Rhy. coelestis* × *Vanda* Bangkhuntian Gold) HCC/AOC shows rounded, flat, upright flowers similar to its *Vanda miniata* (syn. *Asctm.*) parent and *Rhynchostylis* lip shape. The upright flower-stem stance comes from both parents.

Vandachostylis Viboon Velvet 'Memoria Doug Schneebeck' AM-CCM/AOS (*Vanda* Tubtim Velvet × *Rhy. coelestis*) can be very floriferous with larger upright flowers held on an upright flower stem from both parents. Color is variable across cultivars, of which 15 are awarded by the AOS.

Vandachostylis Five Friendships 'Summerfield Elegance' HCC-CCM/AOS (Seng × Prapin), with a *Rhy. coelestis* grandparent on both sides, shows strong *Rhynchostylis* flower shape.

Vandachostylis Leslie Belew 'Carol's Sunshine' AM/AOS (Five Friendships × *Vanda* Pralor) is a third-generation *Rhy. coelestis* offspring with the mean number between the two parents of well-formed, quite large flowers and buds on one stem.

Perreiraara LeBeau Blue 'Soroa Blue Sky' AM/AOS (*Aerides lawrenceae* × *Vandachostylis* Sasicha) is a third-generation *Rhy. coelestis* trigeneric hybrid showing an overwhelming influence of its *Vandachostylis* parent in flower form, color and shape on upright stems and remarkably little *Aerides* influence as the pod parent.

Vandachostylis Mabel Majewski 'Gigi' AM/AOS (Doty × *Rhy. gigantea*), a $\frac{3}{4}$ *Rhynchostylis* hybrid (*Van.* Doty is *Vanda* Medasand × *Rhy. coelestis*) with the expected number of flowers on an upright stem and somewhat larger vanda-like lip with saturated color.

Vandachostylis Veeraphol 'Kimberly Bosser' AM/AOS (*V.* Bangkhuntian Gold × *Rhy. gigantea*) has 47 flowers on two stems — fewer than the mean of the two parents but considerably larger in size. Note the *Rhy. gigantea* lip dominance for shape and color depth.

SELECTED INTERGENERIC OFFSPRING *Rhynchonopsis* Kdares Perfume Angel 'KDARES-1' AM/AOS (*Phalaenopsis* Timothy Christopher × *Rhy. gigantea*) has fewer flowers than expected on a miniaturized plant — features dominated by the *Phalaenopsis* parent and larger flowers with the *Rhynchostylis* lip.

Cleisostylis Rumrill Dandy (*Cleisocentron pallens* × *Rhy. retusa*) is



JAMES MCCULLOCH



GEORGE LECHNER



BRIAN MONK



LEWIS ELLSWORTH



GREG ALLIKAS

one of Rumrill's 163 hybrids — almost exclusively primary hybrids involving at least one lesser-known genus or lesser-known species of more familiar genera. Rumrill Dandy has larger flower segments and a prominent lip from its pollen parent with the enlarged spur and lower floriferousness from the *Cleisocentron*. *Rhynchostylis* is more dominant for the plant habit.

Perreiraara Sunshine Padriew (Bangkok Sunset × *Rhy. gigantea*) was made with an "orange" *gigantea*. The *Rhynchostylis* parent imparts color and saturation, petal stance and a somewhat correct lip and was much less floriferous than expected on a first-bloom seedling. Hopefully, the flower count will rise on a more mature plant. With over half the background from *Rhynchostylis*, this plant, while having interesting flowers, illustrates some of hybridizers' frustrations over less than ideal transference of the many good qualities.

Holcostylis Wu Gift 'Kuo Fu #1' FCC/AOS (*Holcoglossum wangii* × *Rhy. gigantea*) is another unusual cross. The *Rhynchostylis* parent influence shows upright flowers, less petal "propellering," better sepal-to-petal proportions, strong lip color and form, as well as the mean number and size of flowers on an attractive smaller plant with the *Rhynchostylis* habit.

- [31] *Vandachostylis* Five Friendships 'Summerfield Elegance' HCC/AOS; exhibitor: Summerfield Orchids.
- [32] *Vandachostylis* Leslie Belew 'Carol's Sunshine' AM/AOS; exhibitor: Carol Stauder.
- [33] *Perreiraara* LeBeau Blue 'Soroa Blue Sky' AM/AOS; exhibitor: Soroa Orchids.
- [34] *Vandachostylis* Mabel Majewski 'Gigi' AM/AOS; exhibitor: Jack and Norma Majewski.
- [35] *Vandachostylis* Veeraphol 'Kimberly Bosser' AM/AOS; exhibitor: David Genovese.
- [36] *Rhynchonopsis* Kdares Perfume Angel 'KDARES-1' AM/AOS; exhibitor: Kaohsiung District Agricultural Res.
- [37] *Perreiraara* Sunshine Padriew 'Emilia Luna Motes' AM/AOS; exhibitor: Martin Motes.
- [38] *Holcostylis* Wu Gift 'Kuo Fu #1' FCC/AOS; exhibitor: Chien Kuo Fu.

WHAT IS NEXT? AIMS? Where do we go from here? Endless speculation about the “what ifs,” according to a synopsis of James Rumrill’s interview by Maximiano (2004), is a waste of time. Persistence and volume are the secrets to success. Furthermore, his philosophy suggested mainstream ideals should not be motivational factors in choosing crossings. A middle ground, perhaps using more modern scientific developments, seems more likely to succeed with results more attractive to a wider audience and hopefully having fewer failures in producing viable flowering plants.

Let us take it as given that all orchidists suffer from growing space limitations. Therefore, it is logical to experiment in downsizing plant stature. Retaining floriferousness, maintaining aesthetic appeal and many other factors need to also be considered. *Sartylis* Blue Knob, a *Sarcochilus* hybrid and *Van.* Lou Sneary, a *Vanda* (*Neofinetia*) offspring, are successful examples.

Rhynchostylis species have several positive features outlined previously that could counterbalance such features as large plant size, “weedy” plant habit, bunching of flowers near the top of the stem, disproportionate dimensions of flower parts, low flower count, muddy flower color, etc. that may be drawbacks of potential suitors.

Introduction of and further use of some of the small to miniature genera and species in the *Vanda* Alliance should, hopefully, prove successful. For example, there are more than 20 species of *Tuberolabium* such as *Tuberolabium kotoense*, *Tuberolabium quisimbingii* and *Tuberolabium woodii* that have rather *Rhynchostylis*-shaped flowers, and *Tuberolabium stellatum* with more open flowers, which offer potential. *Tuberolabium kotoense* ‘Paramount’s Lana Wilkins’ CCM/AOS had 138 flowers on four stems on a plant that was 9.1 × 3.5 inches (23 × 9 cm), which might help to miniaturize a hybrid and reduce light requirements. Alternately, *Tuberolabium woodii* ‘In Situ’ AM-CCM/AOS with its small 18 flowers per stem on a plant that was 5.9 × 5.1 inches (15 × 13 cm) might enhance the spur, miniaturize the plant, and reduce light requirements.

Plectorrhiza brevilabris has interesting potential with its mini-miniature plants with large, distinctly saccate flowers. For example, *Plectorrhiza brevilabris* ‘Julie-Anne’ CHM/AOS, average 11 flowers and buds on each of four stems, flowers with a natural spread of 0.4 × 0.6 inch (1.0 ×



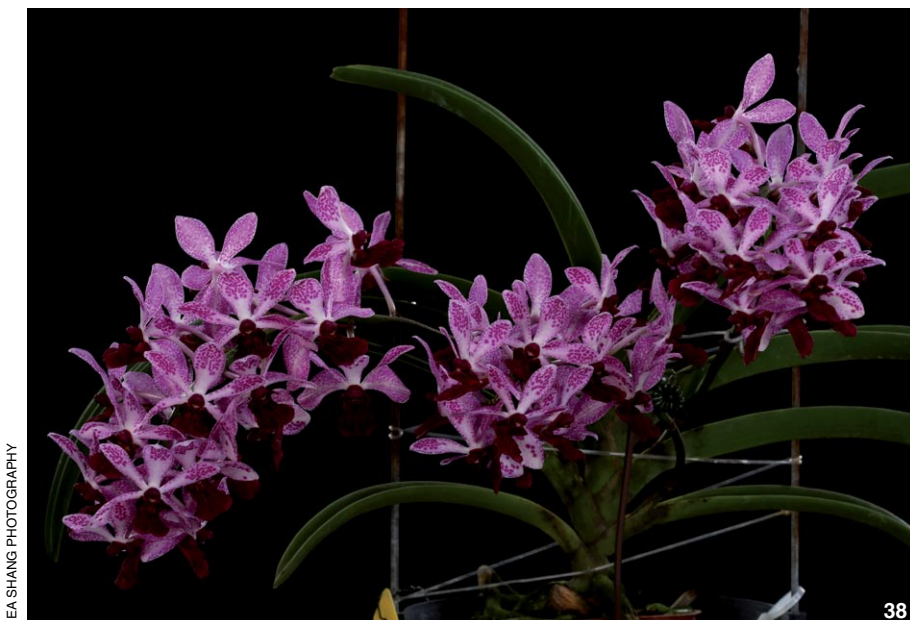
JEA SHANG PHOTOGRAPHY

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CARMEN JOHNSTON

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JEA SHANG PHOTOGRAPHY

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1.5 cm), on a 4.7-inch (12-cm) plant to miniaturize plant size and dramatically lower light requirements.

The half-dozen species of *Jejewoodia*, native to Borneo are mini-miniatures with distichous (overlapping) leaves and commensurately large, bright-white flowers. Considering the size of the flowers, *Jejewoodia* would need to be the capsule parent with the aim of miniaturizing the offspring, perhaps having the distinctive foliage and introducing other colors and better overall proportion to the flower segments.

Although they are large plants with long, laxly flowered, arched flower stems, *Dimorphorchis*, with their upper flowers uniquely different from the lower, could have smaller, more floriferous offspring with *Rhynchostylis* and perhaps enrich the yellow part of the spectrum of *Rhynchostylis* hybrids. *Dimorphorchis rossii* 'Sunset Mesa' AM-CCM/AOS had 14 yellow proximal flowers and 34 lighter-colored, distal flowers on a medium-sized plant. Might the dimorphic flower habit come through in crosses to *Rhynchostylis*?

Dyakia hendersoniana is a miniature monotypic genus with *Holcoglossum*-like flowers with uniform strong-pink coloration with an average of 40 but up to 80 flowers per stem. To date there is only one offspring from such a cross. Potentially, using this plant as a parent would reduce plant size, deepen flower-color saturation and augment floriferousness. *Dyakia hendersoniana* 'Sunshine' AM-CCE/AOS displayed 2,400 flowers and buds on 47 inflorescences on a "miniature" plant, which might reduce light requirements on floriferous, smaller plants.

Renewed breeding efforts with *Rhy. retusa*, particularly using miniature species and hybrids as the other parent, preferably the capsule parent, might take advantage of the *Rhynchostylis* floriferousness, nearly quadruple the number of flowers per stem of its genus mates and reduce its influence on plant size.

Rumrill had some limited success hybridizing angraecoid species with other genera within the Vanda Alliance. Perhaps *Oeonia volucris* with its large, bright-white flowers on a small-to-medium-sized plant could be fertile with *Rhynchostylis*. *Oeonia volucris* 'Mountain Snow' AM/AOS, for example, was awarded with five flowers and buds per stem on a small plant, and it might broaden and flatten the lip while widening angraecoid experimentation into vandaceous hybridizing.

Further use or introduction of species such as *Seidenfadenia mitrata*, miniature *Phalaenopsis* such as *Phalaenopsis appendiculata*, *Phalaenopsis chibae*, *Phalaenopsis difformis*, *Phalaenopsis gibbosa*, *Phalaenopsis hygrochila*, *Phalaenopsis japonica*, *Phalaenopsis javanica*, *Phalaenopsis lobbii*, *Phalaenopsis malipoensis*, *Phalaenopsis parishii*, *Phalaenopsis pulcherrima*, *Phalaenopsis stobartiana* or *Phalaenopsis taenialis* into *Rhynchostylis* breeding could yield meritorious flowers on diminutive plants.

Low fertility is reported (Fuchs 2018) to have been a problem for many crosses. Using tetraploid parents, either naturally occurring or chemically induced, could enable or improve successful germination and growth for many crosses. However, since *Rhynchostylis* flowers normally have heavy substance, the expected increase in polyploids may produce deformities.

More generations of intergeneric hybridizing (currently sixth-generation hybrids are registered) possibly introducing different genera, could yield merit-worthy results presuming the fertility and seedling viability problems can be overcome. Much of this brainstorming may not pan out or the crosses may never take but it is still an example of the numerous avenues left to hybridizers.

In conclusion, *Rhynchostylis* species have been important contributors in the hybridizing programs in the Vanda Alliance, even if less than hoped for in the second and successive generations. Depending on the background of the other parents, increased flower count with flowers well arranged along the stem and having a deeper-colored, correct midlobe on a larger lip are characteristics that can be expected in several generations of offspring of *Rhynchostylis* species. Improved fertility and seedling success can be expected with further experimenting with newer technologies. Continued successes will occur with increased use of the wide spectrum of *Rhynchostylis* colors now available and further introduction of lesser-known vandaceous species and genera. Reintroducing *Rhynchostylis* species, particularly when using modern line-bred cultivars, into complex hybrids that have lost some of the more important positive *Rhynchostylis* characteristics through the generations will hopefully reinvigorate the breeding program.

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Vandas in a Jar

BY TERRY KENNEDY

RECOGNIZING AND PROMOTING a great idea is almost as good as coming up with one myself. A number of years ago, while visiting a friend in Alberta, I noticed several nice vandas blooming in her sunroom. But it was not just the flowers that caught my attention. It was the way they were being grown. Because they require so much air movement around their roots vandas are usually grown in open baskets hung in bright light. Watering and constant misting play havoc with walls and floors in a finished room. These plants were perched atop tall, clear glass vases with their roots curled down inside the vase over a layer of water. The roots were happy with the humidity and her fine wood floor was safe. She misted the roots occasionally. About every 10–14 days, she filled the vase with a diluted fertilizer solution, let the roots absorb the nutrients for an hour or so and then poured it off. The effect of the large vanda fan and the vase was quite artistic. It added a sculptural detail to her growing area — living art.

Because my husband Doug and I have the luxury of growing our orchids in a greenhouse we have been able to hang the vandas and water with abandon. However, there was no way that I could bring them indoors to enjoy their blooms. With the use of a clear vase, I was able to bring them into the house, artfully. Like the *Vanda Wacharin* pictured, the plants grace my living room without suffering from the lack of humidity.

Over the years, I have often suggested this method for growing vandas to people who wanted to grow vandas in their homes and need to provide the humidity those roots love. Some did not even bother with a glass vase. Any glass or plastic wide mouth container will work. Mouth too wide? Use a couple of sticks to balance the plastic pot.

Barbara Kwietniowski, a member of the Southern Ontario Orchid Society, brought this beautiful *Vanda sanderiana* to the Virtual Show Table. Barbara uses a 16-inch (41-cm) high glass vase. The vase is filled with nutrient solution and allowed to sit for an hour or so before draining entirely. Three days later the vase



TERRY KENNEDY

is filled with tap water. After five minutes it is drained, leaving about half an inch (about a cm) in the bottom. Four days later this cycle is repeated. No need to mist in between and she has no humidifier. This sculpture sits in a southwest bay window for the winter. The vanda summers outside, so her biggest challenge is getting those summer roots back in the vase.

There is a reason for the timing Barbara uses: "I did an experiment a few years ago where I weighed my vandas before soaking and again at intervals to see how long it took to reach maximum absorption. Then I weighed them daily to see how long it took for them to dry. Not surprisingly the smaller the vanda, the faster it dried out, but the bigger ones were fine for three or four days."

— Terry Kennedy (email: ourtropics@gmail.com).



BARBARA KWIETNIOWSKI



TERRY KENNEDY

- [1] The author's *Vanda Wacharin* displayed in a glass vase.
- [2] *Vanda sanderiana* grown by Barbara Kwietniowski.
- [3] Here a wide mouth plastic jar is home to a very well grown and rooted vanda. Note that drainage holes have been drilled near the bottom of the container to regulate water level and air movement.



Aerides Lour.

Introduction to the Species

BY GARY YONG GEE

PHOTOGRAPHS, UNLESS OTHERWISE

CREDITED, ARE BY THE AUTHOR

SHOWY SPECIES SUCH as *Aerides* are seen in many orchid collections. In the past, there has been some confusion as to which species should be included in this genus. In cultivation, some plants have been incorrectly named. I hope that the information and illustrations presented here will help with the identification and cultivation of the more commonly cultivated species.

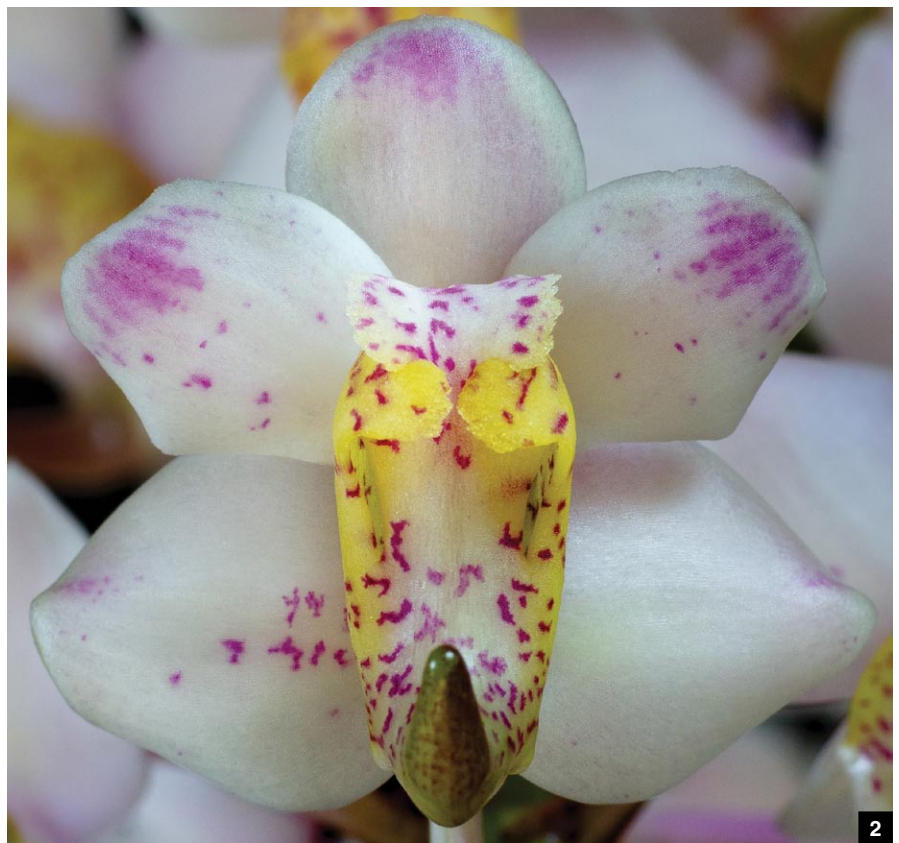
João de Loureiro (1717-1791), a Jesuit missionary, first described *Aerides* in 1790 in *Flora Cochinchinensis*. Initially, de Loureiro described the type species, *Aerides odorata*. The generic name was derived from the Greek “aer” (“air”) and the suffix “-ides” (“resemblance”), referring to the epiphytic habit of the plant. Some early publications have treated the spelling of the genus as neuter (*Aerides odoratum*), but some recent authors have assumed it is feminine (*Aer. odorata*). William Stearn (1983) indicates that most Latin words ending in “-es” are feminine. According to Julian Shaw (2002), *Aerides* is neuter. However, I have treated the species name as feminine for this article.

Since de Loureiro’s description, many species have been added to the genus without a critical understanding of the morphology of the type species. Various authors added species that possessed a nectar spur, but are now recognized as belonging to other genera. Some of these include *Holcoglossum kimbalianum* (Rchb.f.) Garay, *Papilionanthe vandarum* (Rchb.f.) Garay, *Seidenfadenia mitrata* (Rchb.f.) Garay and *Phalaenopsis japonica* (Linden & Rchb.f.) Kocyan & Schuit. (syn. *Sedirea japonica* [Linden & Rchb.f.] Garay & H.R.Sweet).

Members of *Aerides* are monopodial plants that produce short to elongate stems. The stems bear many alternating two-ranked leaves, which have smoothly bilobed apices. Plants produce showy flowers carried in dense, often arched to pendulous racemes, which may have few branches. The trilobed lip is spurred and is usually joined at the end of a prominent column foot. In some species, the lip is articulate (jointed like a hinge) with the column foot. Others have the lip joined as an inflexible extension of the column foot. At the apex of the column, there are two grooved pollinia on a long stipe.

The flowers of *Aerides* vary from white to rose or purple. They may also be white to yellow, with rose to purple spots or blotches.

A genus of about 30 species, *Aerides* is widely distributed in Southeast Asia



MIGUEL DAVID DE LEON

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with many of the species being popular subjects for cultivation. Despite their horticultural appeal, there are still quite a few species that seem to be rare, with many of them that I have never seen. Two of the taxa (*Aerides angustiana* and *Aerides burbridgei*) may be isolated, naturally occurring hybrids and are only known from the original collection.

Little is known about the pollination of the different species, however, a *Xylocopa* (carpenter) bee is known to be the pollinator of *Aer. odorata*. The *Xylocopa*, which is a strong bee, forces the lip open by physically pushing it down away from the column to gain access to the nectar-filled spur.

CLASSIFICATION Eric Christenson (1987) divided the genus into four sections: *Aerides*, *Falcatum*, *Fieldingia* and *Rubescens*. Christenson’s analysis used morphological characters only.

Alexander Kocyan, Ed de Vogel, Elena Conti and Barbara Gravendeel (2008) incorporated molecular phylogenetic studies and revised Christenson’s classification. The latter authors recognized three sections: *Aerides*, *Crispae* and *Fieldingia*. Their studies only sampled 15 species. Nonsequenced taxa have been included here, in the following list. Future studies into taxa that have yet to be sequenced may alter the following classification.

- [1] A small plant, *Aer. krabiensis* Seidenf. grows on vertical limestone often in full sun.
- [2] *Aer. cootesii* Cabactulan, M.Leon & R.B.Pimentel has attractive flowers with a purple-spotted, trilobed lip with yellow side lobes.

Aerides section *Aerides* (column-foot distinctly developed; articulate trilobed lip; spur with bifid swelling, on the inside, in the distal part)

- Aerides angustiana* Rolfe
Aerides cootesii Cabactulan, M.Leon & R.B.Pimentel
Aerides crassifolia Parish ex Burb.
Aerides emericii Rchb.f.
Aerides falcata Lindl.
Aerides houlettiana Rchb.f.
Aerides huttonii (Hook.f.) J.H.Veitch
Aerides inflexa Teijsm. & Binn.
Aerides lawrenceae Rchb.f.
Aerides leana Rchb.f.
Aerides magnifica Cootes & W.Suarez
Aerides migueli Cootes, Cabactulan & Naive
Aerides odorata Lour.
Aerides orthocentra Hand.-Mazz.
Aerides quinquevulnera Lindl.
Aerides. roebelenii Rchb.f.
Aerides rubescens (Rolfe) Schltr.
Aerides savageana A.H.Kent
Aerides thibautiana Rchb.f.

Aerides timorana Miq.

Aerides turma M.Leon, Cootes, Cabactulan & R.B.Pimentel

Aerides upcmae Motes, M.Leon, Cootes & Cabactulan

Aerides section *Crispae* Kocyan, de Vogel, E.Conti & Gravendeel (column-foot distinctly developed; articulate trilobed lip; spur without bifid swelling)

Aerides crispera Lindl.

Aerides macmorlandii B.S.Williams

Aerides phuongthuyii Aver. & V.C.Nguyen

Aerides ringens (Lindl.) C.E.C.Fisch.

Aerides suakauensis Shim

Aerides section *Fieldingia* Pfitz. ex Christenson (column-foot underdeveloped; nonarticulate lip, single-lobed, flat and spreading)

Aerides krabiensis Seidenf.

Aerides maculosa Lindl.

Aerides multiflora Roxb.

Aerides rosea Lindl. & Paxton

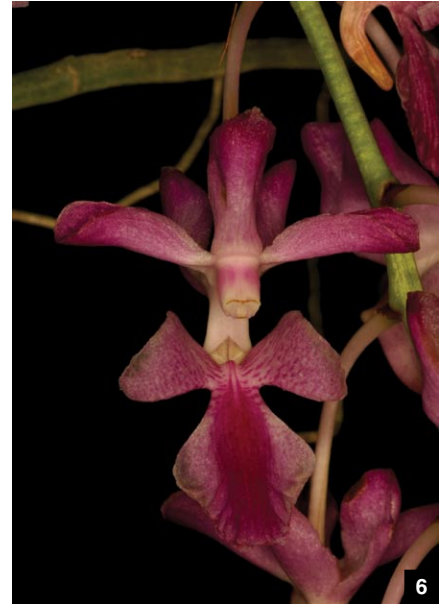
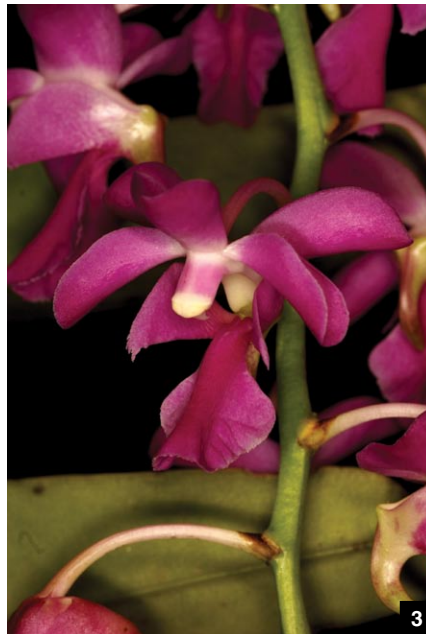
THE SPECIES Table 1 broadly summarizes the distinguishing characteristics of the commonly cultivated species. It is arranged by flowering season, commencing in spring. Hopefully, it can be used, together with the information about each species and the accompanying photographs, to check whether your plant is correctly identified. The information on the individual species is arranged in alphabetical order according to the previously mentioned sections.

In Australia, *Aer. angustiana*, *Aer. emericii*, *Aer. huttonii*, *Aer. inflexa*, *Aer. macmorlandii*, *Aer. maculosa*, *Aer. orthocentra*, *Aer. roebelenii*, *Aer. savageana*, *Aer. thibautiana* and *Aer. timorana* seem to be rare, and I have never seen them in cultivation. Six species that have been published recently are *Aer. migueli* (2014), *Aer. magnifica* (2016), *Aer. cootesii* (2019), *Aer. turma* (2019), *Aer. phuongthuyii* (2019) and *Aer. upcmae* (2020).

Aerides section *Aerides*

Aerides cootesii Cabactulan, M.Leon & R.B.Pimentel was described by Derek Cabactulan, Miguel David De Leon and Reynold Pimentel in *OrchideenJournal* in 2019. The specific epithet honors James (Jim) Cootes, who has spent many years studying the orchids of the Philippines. Jim has also contributed many papers and articles on orchids.

Aerides cootesii is a large, monopodial, epiphytic plant that produces upright to semipendulous stems that may be over 6½ feet (2 m) long. Mature plants can eventually produce up to seven growths from the base. Its stems bear many oblong, alternating, two-ranked, leathery,



flattened leaves, which are 12–14 inches (30–35 cm) long, and 1–1½ inches (28–37 mm) wide. Arched, pendulous, racemose inflorescences are produced from the axillary nodes. The racemes are 8–12 inches (20–30 cm) long, and bear up to 37 showy blooms.

The blooms of *Aer. cootesii* are about 1 inch (27 mm) across. Variable in color, the blooms have white to pale- or light-pink sepals and petals, which are marked at the apex with a rose-purple blotch. The sepals and petals may also have some rose-purple specks. Its trilobed, white lip has yellow side lobes that are variously speckled and barred with purple. The lip midlobe is white to pale pink with purple specks. A musky-citrus scent is produced by the blooms during the day. The

[3] Flowers of *Aer. crassifolia* Parish ex Burb. are sometimes glowing red-purple.

[4] Racemes of *Aer. crassifolia* can bear 25–30 large, showy flowers in spring. The long-lasting, very fragrant flowers are 1–1½ inches (3–3.5 cm) across.

[5] Distributed from Myanmar, Laos and Thailand, *Aer. crassifolia* usually grows in areas that experience seasonally dry conditions.

[6] The outstretched side lobes of the lip of this flower of *Aer. crassifolia* are distinctly spotted.

holotype was blooming in the Philippines in July.

Aerides cootesii is only known from southern Palawan, Philippines. Plants grow

Table 1. Comparison of key characteristics of the species.

Flowering season	Habit of plant and raceme	Flower size and color	Species
Winter to early spring	Medium-sized plant (12 inches [30 cm] long); dense raceme	½ inch (12–13 mm) across; rose to dark purple or white spotted with light pink; rarely pure white	<i>Aer. leeana</i> Rchb.f.
Spring	Compact to medium-sized plant, lax raceme	1–1½ inches (3–3.5 cm) across; deep purple, magenta to amethyst sepals and petals that become paler or white at the base, and deep purple to rose-purple midlobe	<i>Aer. crassifolia</i> Parish ex Burb.
Late spring	Small plant; stems 3–4 inches (8–10 cm) long; dense raceme	¾ inch (2 cm) across; rose to red-purple, often nearly white near the base, deeper rose-purple lip, sometimes the petals may be spotted with purple	<i>Aer. krabiensis</i> Seidenf.
Late spring	Small-sized plant, upright stem, upright, lax raceme	¼–½ inch (6–10 mm) across; uniformly pink to rose-purple flowers	<i>Aer. rubescens</i> (Rolfe) Schltr.
Spring to summer	Very large semipendulous plant; stems may be over 8 feet (2.5 m) long; arched, many-flowered raceme	¾ inch (2 cm) long; cream to pale orange flowers, speckled with purple, with purple blotch at the apex of the sepals and petals; lip midlobe fuchsia-pink, with purple speckles, and greenish spur apex	<i>Aer. migueli</i> Cootes, Cabactulan & Naive
Late spring into summer	Medium-sized plant; stem 4–10 inches (10–25 cm) long; flat leaves; dense raceme	1–1½ inches (25–37 mm) across; sepal and petals are white suffused with amethyst purple, sometimes dotted purple, and the lip is amethyst purple; flowers rarely pure white	<i>Aer. rosea</i> Lindl. & Paxt.
Late spring to early summer	Medium to large plant; stems up to 4–5 feet (120–150 cm) tall; lax raceme	1¼–1½ inches (3–4 cm) across; white sepals and petals tipped rose purple, with the amethyst purple lip	<i>Aer. crispa</i> Lindl.
Late spring to early summer	Large plant with stout stems that are 4–10 inches (10–25 cm) long, folded leaves; dense raceme	¾–1½ inches (2–3.5 cm) across; sepals and petals white at the base grading to rose pink, sometimes spotted with two to three, or more, darker purple spots, light amethyst-purple lip	<i>Aer. multiflora</i> Roxb.
Summer	Large plant; stems may be over 6½ feet (2 m) long; pendulous many-flowered raceme	about 1 inch (2.7 cm) across; flower color variable; white, to pale or light pink sepals and petals, with a rose-purple apical blotch; white lip with yellow side lobes, variously speckled, and barred with purple, lip midlobe is white, to pale pink, with purple specks	<i>Aer. cootesii</i> Cabactulan, M.Leon & R.B.Pimentel
Summer	Medium to large plant, lax raceme	½–1½ inches (2.5–4) cm across; white sepals and petals that are blotched mauve-lavender toward the tips, lip white, with the midlobe marked with a large central deep rose patch	<i>Aer. falcata</i> Lindl.
Summer	Medium to large plant, lax raceme	½–1½ inches (2.5–4) cm across; yellow, sepals and petals tipped with a spot of magenta at the tips, creamy white lip, with a magenta blotch on the midlobe (rarely pale yellow with a white lip)	<i>Aer. houlettiana</i> Rchb.f.
Summer	Small to medium-sized plant, with short stems 1½–2¼ inches (4–6 cm) long; leaves may be spotted purple on both sides; lax raceme	1¼–1½ inches (3–4 cm) long; sepals and petals are white, flushed with rose, and are spotted with red-purple; bright rosy purple midlobe	<i>Aer. maculosa</i> Lindl.
Summer	Large plant; stem may be up to 3 feet (1 m), or more; lax raceme	1–1½ inches (2.5–4 cm) across; variable in color from light peach to cream, white, near white or blush pink, sometimes with darker pink apices, sometimes rose-purple midlobe	<i>Aer. odorata</i> Lour.
Summer	Large plant; stems up to 3 feet (1 m) long, pendulous raceme	½ inch (16 mm) across; white, with unevenly distributed rose-purple spots, and a rose-purple blotch at the apex; lip has a rose-purple midlobe	<i>Aer. turma</i> M.Leon, Cootes, Cabactulan & R.B.Pimentel
Late summer to early autumn	Medium- to large plant (up to 5 feet [1.5 m] long), dense raceme	¾–1 inch (2–2.5 cm) long; white with a bright amethyst-purple apical blotch on the sepals and petals, and scattered fine purple dots; rarely with a yellow base color, or rarely pure white, or rarely nearly all purple	<i>Aer. quinquevulnera</i> Lindl.
Late summer to early autumn	Large plant; stems 1–3 feet (30–100 cm), or more tall; lax raceme	1¼–1½ inches (3–4 cm) across; white with a rich amethyst-purple apical blotch on the sepals and petals, rich amethyst-purple midlobe; less commonly with lip side lobes purple-spotted, or with a yellow base-color; or rarely pure white	<i>Aer. lawrenceae</i> Rchb.f.
Midautumn to early winter	Medium-sized plant; stem up to 16 inches (40 cm) long; horizontal to arched, dense, raceme	¾–1 inch (2–2.5 cm) across; white flowers, densely, fine-spotted, or flushed, with deep pink; lip dark pink, with a green-tipped spur; rarely pure white, with greenish spur apex	<i>Aer. magnifica</i> Cootes & W.Suarez
Winter	Large plant, pendulous many-flowered raceme	1¼ inches (3 cm) across; flowers pale green, to greenish white, with dark purple blotches on the apices of the sepals, and petals; dark purple median band on lip midlobe	<i>Aer. upcmae</i> Motes, M.Leon, Cootes & Cabactulan

in bright light, often in direct sunlight, on the branches of trees in secondary forest at around 1,000 feet (300 m) above sea level.

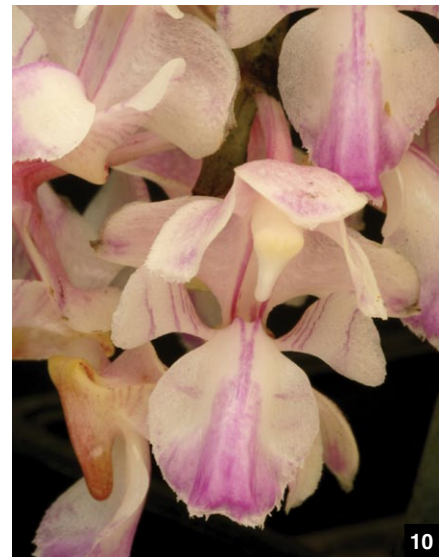
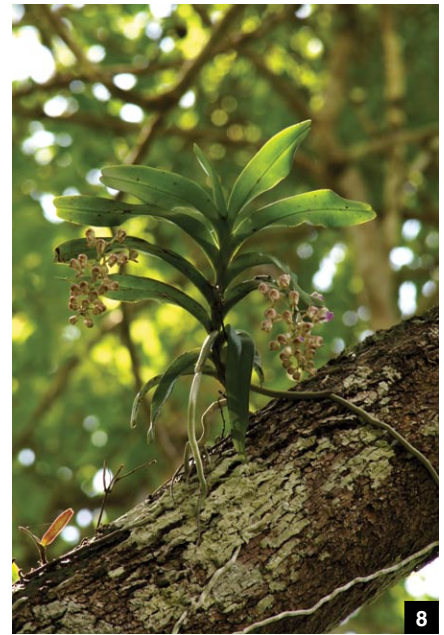
Aerides crassifolia Parish ex Burb. is a stout compact plant that produces short stems with thick, rigid leathery leaves that are 2½–4¼ inches (6–12 cm) long, and 1–1½ inches (2.5–4 cm) broad. Frederick Burbidge described this species in *The Garden* in 1873. The specific epithet is from the Latin “crassus” (“thick”) and “folius” (“leaved”), referring to the thick, succulent leaves.

Borne close together, the dull, dark-green to olive-green leaves of *Aer. crassifolia* are unequally bilobed at the apex. Plants grown in bright light may have red-purple flushing and purple spots on the upper surface of the leaves. It is during spring when the pendulous inflorescences are produced. The racemes may have few branches and are up to 12 inches (30 cm) long, carrying as many as 25–30 (up to 50) loosely arranged, large, showy flowers that are 1¼ inches (3–3.5 cm) across.

The flowers of *Aer. crassifolia* have a thick substance and are quite fragrant during the day, plus they are long lasting. They have deep purple to magenta or amethyst sepals and petals, which become paler or white at the base. The large, fringed lip is folded along the central line, so that it hides the forward-pointing spur underneath, which is greenish at the tip. The midlobe is deep purple to rose-purple. *Aerides crassifolia* is distributed through Myanmar, Laos and Thailand, where it often grows in areas subject to seasonally dry conditions.

Aerides falcata Lindl. is considered by some authorities as being a variable species with one variety. John Lindley described *Aer. falcata* in Paxton’s *Flower Garden* in 1852. The specific epithet comes from the Latin “falcatus” (“falcatate, curved like a sickle”), referring to the curved leaves. *Aerides falcata* is widely distributed through Myanmar, Thailand, Cambodia, Laos and Vietnam.

Aerides falcata produces stems that bear oblong-ligulate, leathery leaves. The leaves are 5–12½ inches (13–32 cm) long and 1–1½ inches (3–4 cm) broad. Its leaves are grey-green above, and often streaked dark green or reddish underneath. Pendent racemes are produced from the leaf axils in summer. The racemes are equal to or exceed the length of the leaves and can be 4–14 ½ inches (10–37 cm) long. The racemes bear many (up to 30) strongly day-scented, well-spaced



flowers, which are 1–1½ inches (2.5–4 cm) across.

The flowers of *Aer. falcata* have white sepals and petals that are blotched with mauve-lavender to violet or crimson, mainly toward the tips. They may also have some fine-violet spotting on the sepals and petals. The white lip has the side lobes streaked or finely spotted with violet to amethyst; the midlobe is marked with a large central violet or deep rose patch; and the spur is greenish. Lasting for about two weeks, the blooms produce a pleasant, citronella-like perfume during the day.

Aerides falcata f. *alba* is the rare form, which has pure white flowers, devoid of any pink or purple coloration.

Aerides houlettiana Rchb.f. is considered by some authors to be the yellow-flowered variety of *Aer. falcata*.

[7] The racemes of *Aer. falcata* Lindl. carry laxly arranged blooms. White flowers with mauve-pink markings are typical. A prominent stripe of color marks the center of the lip midlobe. Reflexed segments such as the lip midlobe (inset) are often a characteristic.

[8] Produced in summer, the strongly scented blooms of *Aer. falcata* are 1–1½ inches (2.5–4 cm) across.

[9] Lasting for about two weeks, the flowers of *Aer. falcata* have a citronella-like perfume during the day. This example has stippling on the lip side lobes as well as on the white margins of the midlobe.

[10] Sometimes the sepals and petals of *Aer. falcata* may be blush pink. Note the forward-pointing spur, on the underside the lip.

Heinrich Gustav Reichenbach described *Aer. houletiana* in the *Gardeners' Chronicle and Agricultural Gazette* in 1872. The species was named in honor of Mr. Houlet, a friend of Reichenbach, and former head gardener at the Jardin Des Plantes, Paris. James Veitch reduced it to a variety of *Aer. falcata* in *Manual of Orchidaceous Plants* in 1891 (Veitch and Sons 1887–1894).

According to Eric Christenson (1993), *Aer. houletiana* is morphologically similar to *Aer. falcata*, but differs merely by the yellow ground-color and possibly by a slight difference in fragrance. He considered these differences to be too trivial to warrant elevation to specific rank at that time. Christenson said that the typical flowers of *Aer. falcata* are white with a rose lip. Like several other species in the genus, each sepal and petal is marked with a rose-colored blotch at the end. The showy individual flowers may be of good form with flat spreading segments, but more typically they have what is considered poor floral form with reflexed segments. He said that both *Aer. falcata* and *Aer. houletiana* vary in leaf length, inflorescence length, and in the density of the flowers on the raceme. The leaves vary in length from 5–12½ inches (13–32 cm) long, and the inflorescences may be densely flowered racemes that are 4 inches (10 cm) long or loosely flowered racemes that are up to 14½ inches (37 cm) in length.

Gunnar Seidenfaden (1988), however, followed Victor Summerhayes in keeping the two taxa as separate species. Not only are the flowers distinctive on account of the color, but Summerhayes found that the leaves of *Aer. houletiana* are narrower, and the flowers often larger than *Aer. falcata*. James Veitch indicated that the racemes of *Aer. houletiana* are denser and shorter, and that the lip is fimbriate rather than denticulate. I recognize *Aer. houletiana* as a distinct species. Future scent analysis may be further evidence for separating the two species.

Aerides houletiana has pale- to dark-yellow, to tawny yellow, or buff-colored sepals and petals, which are tipped with a spot of magenta at the apices. Its creamy white lip has a wedge-shaped magenta blotch toward the tip of the fimbriate midlobe, plus magenta lines on the side lobes. An albino form of *Aer. houletiana* is illustrated by Nanitya Vaddhanaphuti (2001) as *Aer. falcata*, which has pale-yellow sepals and petals and a pure-white lip. I recognize this rare color form as *Aer. houletiana* f. *immaculata*. The blooms of



Aer. houletiana open simultaneously and last for seven to ten days.

Aerides houletiana is distributed in Laos, Thailand, Cambodia and Vietnam. It used to be exported in quantity from Thailand and seems to be more common in cultivation than *Aer. falcata*. Peter O'Byrne (2001) said that *Aer. houletiana* likes more shade than most *Aerides* species.

Aerides lawrenceae Rchb.f. is sometimes spelled as *Aer. lawrenciae*. Heinrich Gustav Reichenbach described it in the *Gardeners' Chronicle and Agricultural Gazette* in 1883. I guess that Reichenbach must have used the spelling *lawrenciae* in the original publication. He dedicated it to Lady Elizabeth Lawrence, wife of Sir James John Trevor Lawrence,

[11] *Aerides houletiana* 'Liquid Gold' AM/AOC. Eric Christenson has said that *Aer. houletiana* differs from *Aer. falcata* merely by the yellow ground-color and possibly by a slight difference in fragrance. Insets clockwise from upper left: *Aerides houletiana* (Rchb.f.) Veitch has golden-yellow flowers that are marked with magenta at the apices of the sepals, on the underside of the column, and along the center of the lip midlobe; a pale form of *Aer. houletiana* that lacks the dark amethyst markings on the lip; the lip midlobe may be recurved along the center in *Aer. houletiana*; some cultivars have intense color, combined with the flat lip midlobe.

who was, at that time, the President of the Royal Horticultural Society.

This species was first introduced to European cultivation by Messrs. Sander & Co. from the Philippines via their collector Carl Roebelen (also spelled Roebbelen and Roebelin). *Aerides lawrenceae* is found in southeast Mindanao growing on trees in light shade, but it is sometimes quite exposed. A low-elevation species, which is found at altitudes up to 1,640 feet (500 m), *Aer. lawrenceae* has been observed growing on the same tree as *Vanda sanderiana* Rchb.f. (syn. *Euanthe sanderiana* [Rchb.f.] Schltr.) and *Phalaenopsis sanderiana* Rchb.f.

Aerides lawrenceae is a large to very large plant that produces upright stems, that are 1–3 feet or more (30–100 cm) tall. The stout stems bear many two-ranked leaves in the upper portion. The curved, leathery, strap-shaped leaves are 8–12 inches (20–30 cm) long and 1–2 inches (3–5 cm) broad, and they have unequally bilobed tips. Pendulous racemes, which are as long as or longer than the leaves are produced from nodes at the leaf axil. The racemes bear 20–30 attractive, waxy flowers, which are strongly and pleasantly scented during the day. Large healthy plants usually bear several racemes from each stem.

The flowers of *Aer. lawrenceae* are among the largest in the genus. They are 1–1 ½ inches (3–4 cm) across, and the coloring is variable. In the typical form, the flowers are white with a rich amethyst-purple apical blotch on the sepals and petals. The trilobed white lip has a green spur, and the midlobe is rich amethyst purple. Sometimes there may be some purple suffusion or spots extending from the colored midlobe to the green spur. The flowers often exude a sugary liquid on the back of the tips of the sepals. They are only open for about two weeks and appear from late summer to early autumn.

The form with yellow-colored lip is known as *Aer. lawrenceae* var. *sanderiana* (Rchb.f.) Sander ex Kraenzl. Its lip may sometimes bear some fine purple specks or spots, but can also be immaculate. A variant with more extensive fine purple spots on the side lobes of the lip was named as *Aer. lawrenceae* var. *punctata* Ames & Quisumb. Extremely rare, the pure white form is *Aer. lawrenceae* f. *fortichii* (Ames & Quisumb.) M.Wolff & O.Grüss. In accordance with currently accepted botanical classification, I prefer to recognize the yellow-lip and purple-spotted-lip variants as formas:



Aer. lawrenceae f. *sanderiana*, and *Aer. lawrenceae* f. *punctata*.

Closely allied to *Aer. odorata*, but distinguished by the longer racemes and larger flowers with a broader base to the lip spur, *Aer. lawrenceae* has richer amethyst purple or brighter markings. Often flowering later, *Aer. lawrenceae* usually blooms in the autumn, while *Aer. odorata* blooms from late spring to summer.

The thick roots of *Aer. lawrenceae* prefer a wet–dry cycle. It will grow well in a basket or pot with a coarse medium so that there is humid air circulating around the roots. Most roots will prefer to grow on the outside of the container and hang in the air in search of something to which to attach. Dark green leaves indicate low-light conditions. Plants seem to grow and flower well under 60–70 percent shade with plenty of humidity and water during the warmer months. Growers in regions that do not receive much sunlight may need to decrease shading in winter so that the leaves are a medium green color. In winter, I recommend a minimum of 54



[12] The waxy flowers, largest in the genus at about 1½ inches (4 cm) across, of *Aer. lawrenceae* Rchb.f. only last for about two weeks in early autumn.

[13] The rich amethyst-purple markings on the segments are typical of *Aer. lawrenceae*. The apex of the spur may be reddish.

[14] It is rare for the lip midlobe of *Aer. lawrenceae* to remain flat, as in this choice cultivar.

[15] The mark on the end of the sepals and petals may be small, and the spur apex greenish, like this cultivar of *Aer. lawrenceae*.

[16] *Aer. lawrenceae* f. *punctata* has pink specks on the lip, which is especially prominent on the side lobes.

F (12 C) with overhead protection. The leaves are best kept dry at night during the colder months.

Aerides leeana Rchb.f. is perhaps better known under its later synonym of *Aer. jarckiana* Schltr. Heinrich Gustav Reichenbach described *Aer. leeana* in the *Gardeners' Chronicle and Agricultural Gazette* in 1881. He named it in honor of Mr. Lee of Downside (near Leatherhead), England, who had sent him material for description. *Aerides leeana* is endemic to Luzon in the Philippines, where it grows at low elevations up to around 2,600 feet (800 m) altitude. A distinctive characteristic of this species is that the side lobes of the lip fold over and hide the opening to the spur.

Aerides leeana is a medium-sized plant that produces an upright, curved or recurved stem, which is 12–14 inches (30–35 cm) long. Borne along the stems are two-ranked, strap-shaped, leathery leaves, which are 5–8 inches (12–20 cm) long, and ¾–1¼ inches (2–3 cm) broad. The leaves are unequally bilobed at the apex. Its inflorescences are up to 16–26 inches (40–65 cm) long and are occasionally few-branched. They are initially erect with the rachis horizontal, arched or pendent. The rachis is densely many-flowered, bearing up to about 30 small flowers in late winter to early spring. Benjamin Williams (1894) reported the blooms to be sweetly scented.

The small flowers of *Aer. leeana* are ½ inch (12–13 mm) across, and ¾ inch (18–19 mm) long. The blooms open progressively along the rachis, so that there are about 12–15 flowers open at one time. The sepals and petals are rose to dark purple, or white and spotted with light pink. The lip is magenta to purple, and the side lobes are spotted with magenta. Its straight spur is greenish or tipped green. *Aerides leeana* f. *alba* is the rare, pure-white-flowered form.

Being a lowland plant, *Aer. leeana* is best cultivated with a winter minimum of 54–60 F (12–15 C). Plants will tolerate lower temperatures for short periods if the leaves are dry at night. Black spotting of the leaves and leaf drop may occur if temperatures remain below 50 F (10 C) for long periods. Unlike most members of the genus, which prefer bright light, *Aer. leeana* seems to grow and flower well under shady conditions.

Aerides magnifica Cootes & W.Suarez was described by Jim Cootes and Wally Suarez in *OrchideenJournal* in 2014. The specific epithet comes from the Latin “magnificus” (“majestic, grand, great,



excellent”) referring to the showy display of flowers. This species has been cultivated with unofficially published names: *Aerides quinquevulnera* var. *calayanensis* Hort. or *Aerides calayana* Hort.

Aerides magnifica is a monopodial, epiphytic plant that produces upright, terete stems that may be up to 16 inches (40 cm) long. The stems bear alternating two-ranked, linear to narrowly oblong, arching leaves, which are up to 1 foot (30 cm) long and 1½ inches (4 cm) broad. Horizontal to gently arching racemes, which have a pendent rachis, are produced from nodes opposite the leaf base. Flowering occurs from midautumn to early winter.

The racemes of *Aer. magnifica* are longer than the leaves and bear many small flowers, which are ¾–1 inch (20–26 mm) across. Sweetly scented during the day, the white flowers are densely fine-spotted or flushed with deep pink and can often appear to be pink. Its lip is dark pink with a greenish- or rose-tipped spur. *Aerides magnifica* f. *alba* bears pure white flowers, which have a greenish-yellow apex to the spur.

Endemic to the Philippines, *Aer. magnifica* has been found on Calayan in the Babuyan group of islands north of Luzon. The highest mountain on the island is Mt. Calayan, which reaches 1,780 feet (543 m) elevation.

Aerides migueldavidii Cootes, Cabactulan & Naive was described by

[17] This cultivar of *Aer. lawrenceae* f. *punctata* has intensely colored segments.

[18] Note the yellow base-color of the lip of *Aer. lawrenceae* f. *punctata*, with purple specks, particularly on the side lobes.

[19] *Aer. lawrenceae* f. *sanderiana* can be distinguished by the yellow lip side lobes, which are unspotted.

[20] *Aer. lawrenceae* f. *sanderiana* has a pale yellow lip, which may be unspotted.

[21] *Aer. lawrenceae* f. *sanderiana*, with the fawn-yellow lip side lobes and some sparse spotting on the front side, is close to the original form dedicated to Sander.

Jim Cootes, Derek Cabactulan and Mark Arcebal Naive in *OrchideenJournal* in 2016. The specific epithet honors Miguel David De Leon, who cultivated the type.

Aerides migueldavidii is a large monopodial plant that produces initially upright, soon becoming semipendulous, stems that may be over 8 feet (2.5 m) long. Mature plants may eventually produce up to seven branches from the base. The stout stems bear many oblong, leathery, two-ranked, alternating leaves, which are up to 1 foot (30 cm) long and 1½ inches (3.5 cm) wide. Pendulous, racemose inflorescences are produced from axillary nodes, which are up to 1½ feet (45 cm) long. The racemes carry as many as 45 small blooms.

The flowers of *Aer. migueldavidii* are under 1 inch (2 cm) long, and they produce a sweet, powdery scent during the day. Variable in color, the flowers have cream to pale-orange sepals and petals, which are speckled with purple plus a purple blotch at the apex. Its spurred, trilobed lip has a fuchsia-pink midlobe and is speckled with purple; and the spur apex is greenish. Blooming occurs from March until July in its natural habitat. Known only from Mindanao, Philippines, little seems known about the habitat of *Aer. migueldavidii*.

Aerides odorata Lour. is the type species for the genus. As mentioned previously, João de Loureiro described it in his *Flora Cochinchinensis* in 1790. He gave it the specific epithet from the Latin “odoratus” (“perfumed, fragrant”) referring to its sweet-spicy, daytime aroma. This species is extensively distributed from the tropical Himalayas of India (Sikkim) and Nepal, the Khasia Hills, south to Tenasserim, and throughout Southeast Asia, southern China, Indonesia and Borneo. It has been occasionally reported in the Philippines.

Aerides odorata is a large, scrambling plant that produces stems that may be up to 3 feet (1 m) or more in length; but the stems are usually 4–12 inches (10–30 cm) long. Large mature plants are often branched toward the base, and the stems droop with age as they lengthen. Many leathery, fleshy, oblong-ligulate leaves are borne along the stems in two ranks. The pale-green leaves are roundly lobed at the apex and are 6–12 inches (15–30 cm) long, and ¾–2 inches (2–5 cm) broad. Several arched to pendulous inflorescences, which are 10–14 inches (25–35 cm) long, are produced from the leaf axils of each stem in the summer. The racemes are densely flowered with 20–30 (sometimes



[22] The inflorescences of *Aer. leeana* Rchb. f., also known by its later synonym *Aer. jarckiana* Schltr., are initially erect, with an arched, horizontal or pendent rachis.

[23] The unscented flowers of *Aer. leeana* has the side lobes of the lip fold over to hide the opening to the spur and exposing the column.

[24] *Aer. magnifica* was described by Jim Cootes and Wally Suarez in *Orchideen-Journal* in 2014.

[25] The column of *Aer. magnifica* is hidden by the lip.

[26] *Aer. magnifica* f. *alba* lacks the pink coloration of the typical form.

up to 40), small, sweet-smelling blooms, which are ½–1 inch (1.5–2.5 cm) across. Peter O’Byrne (2001) makes the comment that not everyone finds the lemon-honey scent attractive. The back of the sepals often exudes sticky, sweet nectar, which is highly attractive to ants and may develop sooty mold.

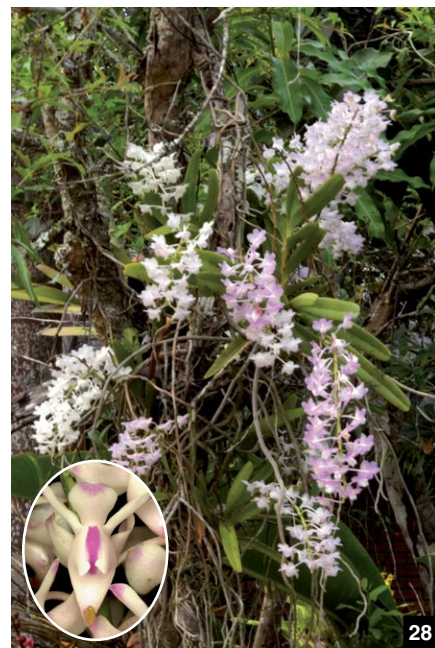
The flowers of *Aer. odorata* are variable in color from light peach to cream, white, near white, or pink. Sometimes the sepals and petals are purple-spotted, or purple-tipped, and the spur is green to yellow at the apex. Its lip has a hook-like spur; the midlobe may be white, pink or rose purple, and the side lobes may be sometimes golden yellow. Under ideal conditions, the scented blooms will last for about three to four weeks.

Two white forms of *Aer. odorata* are known. Manfred Wolff and Olaf Grüss recognized this form as *Aer. odorata* f. *immaculata* in *Orchid Atlas* in 2007. One is a white form of the typical *Aer. odorata*, which has pendulous racemes. The other is a tetraploid race, which is found in northern Thailand, and produces upright inflorescences.

Despite its many color variations, few named forms have been published. In the past, many names have been published for different cultivars or forms, which seem to nowadays be treated as synonyms of *Aer. odorata*. Some of these include: *Aerides ballantineana* Rchb.f., *Aerides suavissima* Lindl. and *Aerides virens* Lindl. I used to often see plants labelled with the latter name. I recognize *Aer. odorata* f. *suavissima* as being distinct. This form can be distinguished by the buff-yellow side lobes, which are usually spotted rose-purple, of the lip.

Distributed over a wide range of altitudes, between 985 and 6,560 feet (300–2,000 m) elevation, *Aer. odorata* seems to be easy to grow and bloom in cultivation under a range of conditions. An epiphytic plant, which is found usually high up on the branches of trees where the light is bright, this species often grows in full sunlight. In tropical and subtropical areas, it is a suitable orchid for cultivation in the garden. Attach it firmly to a tree that does not shed its bark and that is not densely leafy. Ensure that it gets watered during the warmer months. It will eventually develop into a specimen plant. Benjamin Williams (1894) reported large specimens, which produced 50–60 racemes each year.

Aerides quinquevulnera Lindl. was described by John Lindley in *Sertum Orchidaceum* in 1833. Lindley gave it the



- [27] *Aer. miguelavidii* Cootes, Cabactulan & Naive has variably colored flowers that range from cream to pale orange, with fine purple spots. The sepals and petals are also blotched at the apex with purple, and the lip midlobe is also purple. Found in Mindanao, Philippines, the flowers have very long lip side lobes, as well as a very long lip midlobe.
- [28] *Aer. odorata* Lindl. is a suitable orchid for garden culture in tropical and subtropical areas. As the name implies, the sweet-smelling flowers are very fragrant. Although about 1 inch (2.5 cm) across, the recurved petals (inset close-up) make them appear narrower.
- [29] Variable in color, the flowers of *Aer. odorata* are mostly produced in the summer. An albinistic form (inset) also occurs naturally.
- [30] The lip of *Aer. odorata* may sometimes be yellow like this *Aer. odorata* f. *suavissima* from Sabah, and the lip side lobes are usually speckled (inset close-up).

specific epithet from the Latin “quinque” (“five”) and “vulnerus” (“wounds”), referring to the five large, purple markings on the end of the sepals and petals. This species was considered to be endemic to

the Philippines until its recent discovery in the Madang region of Papua New Guinea. The occurrence of this species so far from its original distribution suggests to me that it may be the result of an introduction and

subsequent naturalization. Its distribution in the Philippines ranges from Luzon and Mindoro to Negros, where it is found in bright habitats between 985 and 6,560 feet (300–2,000 m) altitude.

Aerides quinquevulnera is a large, epiphytic plant. Old plants can produce stems that are up to 5 feet (1.5 m) long and often multibranched from the base. The stems bear many two-ranked, glossy, light-green leaves, which are 10–12 inches (25–30 cm) long and 1–1½ inches (2.5–4 cm) broad. Its leaves are unequally bilobed at the apex. Several pendulous racemes are produced from each stem from late summer to early autumn. The racemes are up to 18 inches (45 cm) long, and are usually longer than the leaves. They bear many flowers, which are ¾–1 inch (2–2.5 cm) long. The blooms produce a spicy scent during the day.

Another variable species, the sepals and petals of *Aer. quinquevulnera* are usually white with a bright amethyst-purple apical blotch. In addition, there are fine purple dots scattered over these segments, which often have a greenish tinge. Its lip is deep amethyst purple with side lobes that are white to pink and faintly dotted with purple. The hook-like spur has a green tip. The blooms last for two or sometimes up to three weeks.

Aerides quinquevulnera f. *farmeri* (Boxall ex Náaves) M.Wolff & O.Grüss is the pure-white form; *Aer. quinquevulnera* f. *flava* (Valmayor & D.Tiu) W.Suarez has a yellow base color with purple spotting and markings; while *Aer. quinquevulnera* var. *purpurata* Rchb.f. has its white segments suffused nearly solid purple due to the merging of the purple spots and apical markings. My preference is to refer to these color variations as formas (f.), and I recognize the latter as *Aer. quinquevulnera* f. *purpurata*.

Characteristics distinguishing *Aer. quinquevulnera* from the closely related *Aer. odorata* include the leaves, which are basally compressed so that they seem to be almost petiolate (stalked); the longer (¼-inch [9-mm]) floral bracts; and the smaller, usually finely purple-spotted flowers. In addition, the midlobe of *Aer. quinquevulnera* is always evenly dentate (toothed).

Aerides rubescens (Rolfe) Schltr. was first described by Robert Rolfe as *Saccolabium rubescens* in the *Bulletin of Miscellaneous Information, Royal Botanic Garden, Kew* in 1906. The specific epithet comes from the Latin “*rubescens*” (“reddening”), referring to the mauve-colored blooms. Rudolf Schlechter



transferred this species to *Aerides* in *Orchis* in 1915.

Eric Christenson (1987) placed *Aer. rubescens* in a monotypic section *Rubescens* (nonarticulate, trilobed lip with a reduced midlobe). This species seems distinctive with the upright racemes and quite small flowers. Subsequent studies by Alexander Kocyan et al. (2008) classified this species in section *Aerides*.

Aerides rubescens is a small, monopodial, epiphytic plant that produces upright stems that are 3–4 inches (7–10 cm) long. The stems bear alternating, two-ranked, strap-shaped, light-green leaves, which are 3½–4 inches (8.5–10 cm) long and ½–¾ inch (17–20 mm) broad, spaced at ½–¾-inch (1.5–2-cm) intervals. Upright

racemes, which are 5–6 ½ inches (12–17 cm) long, are produced from nodes in the leaf axil, opposite the leaf base. The raceme bears many small flowers above the foliage. Its blooms are evenly and laxly distributed around the 3–3½-inch-long (7–9-cm-long) rachis.

Uniformly colored, deep pink to rose purple, the flowers of *Aer. rubescens* are ¼–½ inch (6–10 mm) wide and ½ inch (12–16 mm) long. They have darker-purple, incurved side lobes, which partially cover the entrance to the spur. There is a pale-yellow anther cap at the apex of the whitish column. These straight-spurred, unscented flowers open quickly in succession in late spring. The blooms last for about two weeks. Endemic to

Vietnam, little information seems to be available regarding the habitat for *Aer. rubescens*.

Aerides turma M.Leon, Cootes, Cabactulan & R.B.Pimentel was described by Miguel David De Leon, Jim Cootes, Derek Cabactulan, and Reynold Pimental in *OrchideenJournal* in 2019. The specific epithet comes from the Latin “turma” (“swarm, squadron”) referring to the alumni of the University of the Philippines College of Medicine, Batch 1995.

Aerides turma is a large, epiphytic, monopodial plant that produces upright to pendulous stems that may be up to 3 feet (1 m) long. Mature plants may eventually form up to five smaller growths from the base. The stems bear many two-ranked, alternating, oblong leaves, which are 6–9½ inches (15–24 cm) long, and 1 inch (18–27 mm) wide. Racemose, arched to pendulous racemes are produced from nodes in the leaf axil. The racemes are 2–6½ inches (5–16.5 cm) long and carry up to 32 small flowers.

The flowers of *Aer. turma* are ½ inch (16 mm) across. They have white sepals and petals with unevenly distributed rose-purple spots, and a rose-purple blotch at the apex. Its trilobed white lip has a rose-purple midlobe with two distinct purple lines running inside from the base of the side lobes to the base of the lip. The inside of the spur is spotted purple, and the apex is green and sometimes sparsely speckled purple. The holotype has been in bloom in July in the Philippines.

Aerides turma f. *anniversaria* (published as *anniversarius*) is an albinistic color form, which has greenish-white flowers, lacking the rose-purple markings. The forma epithet comes from the Latin “anniversaries” (“occurring annually, every year”), referring to the 25th anniversary of the University of the Philippines College of Medicine class of 1995.

Aerides turma is endemic to Luzon, Philippines, where it has been found at around 3,000 feet (900 m) elevation. Plants grow on the branches of trees high up, in cool secondary forest and often in direct sunlight.

Aerides upcmae Motes, M.Leon, Cootes & Cabactulan was described by Martin Motes, Miguel David De Leon, Jim Cootes, and Reynold Cabactulan in *OrchideenJournal* in 2020. The specific epithet “upcmae” (pronounced “U.P.C.M.–ae”) was derived from the acronym for University of the Philippines College of Medicine with the Latin suffix “-ae,” referring to the alma mater of Miguel



MIGUEL DAVID DE LEON



MIGUEL DAVID DE LEON



MIGUEL DAVID DE LEON



MIGUEL DAVID DE LEON

David De Leon, discoverer and coauthor of this species.

Aerides upcmae is a large monopodial, epiphytic plant that produces initially upright stems. The stems soon become pendulous, and may be over 3 feet (1 m) long. The stems bear many two-ranked, alternating, oblong, thick, leathery, flattened leaves that are up to 1½ feet (48 cm) long, and 2 inches (48 mm) wide. One to four axillary, arching to pendulous racemose inflorescences are produced at one time. The racemes are 6–18½ inches (15–47 cm) long, and can bear as many as 45 flowers.

The flowers of *Aer. upcmae* are 1¼ inches (3 cm) across, and they produce a pleasantly scented citrus-musk fragrance during the day. Its sepals and petals are pale green to greenish white with dark-purple blotches on the apices. The trilobed, greenish-white lip has clear side lobes with some purple spots and striations at the base. Its midlobe is marked with a prominent, dark-purple median band that extends from the base to the apex. The spur has a green to greenish-purple apex. The holotype was blooming in December in the Philippines. Restricted to Bukidnon province, Mindanao, Philippines, *Aer. upcmae* is found growing on trees in secondary forest, between 2,600–3,000 feet (800–900 m) altitude.

Aerides section *Crispae*

Aerides crispa Lindl. was described by John Lindley in his *Genera and Species*

[31] The specific epithet of *Aer. quinquevulnera* Lindl. refers to the five large purple markings on the ends of the sepals and petals.

[32] *Aer. quinquevulnera* has small flowers, which are ¾–1 inch (2–2.5 cm) long, and have a spicy daytime scent and there are usually fine purple specks, or dots, scattered over the flowers. The blooms of *Aer. quinquevulnera* may often have a greenish tinge (inset).

[33] *Aer. quinquevulnera* f. *purpurata* has more extensive reddish purple on the sepals, petals and side lobes of the lip.

[34] *Aer. rubescens* is a small plant that produces upright, laxly arranged racemes. The unscented flowers last for about two weeks. The long-spurred lip (inset close-up) of *Aer. rubescens* has infolded side lobes that cover the spur entrance.

[35] *Aer. turma* M.Leon, Cootes, Cabactulan & R.B.Pimentel bears small flowers, with lip midlobe, plus petal and sepal tips marked purple.

[36] *Aer. turma* f. *anniversaria* is the albinistic form, with white flowers, lacking the purple markings of the typical form.

[37] *Aerides upcmae* Motes, M.Leon, Cootes & Cabactulan has flowers that are about 1¼ inches (3 cm) across. Note the erose margins to the lip side lobes, and midlobe.

[38] A dark clone a *Aerides upcmae* with deeper rose-purple flowers.

of *Orchidaceae* Plants in 1832. Lindley gave it the specific epithet from the Latin “*crispus*” (“crisped, irregularly waved”), referring to the large, fringed lip.

A large, upright, monopodial, epiphytic plant, *Aer. crispata* produces stout, purplish stems, which may be 4–5 feet (120–150 cm) tall. The stems bear thick, dark-green, leathery leaves in two ranks, which are 6–8½ inches (16–22 cm) long and up to 3 cm (1 inch) broad. The upright to arched or drooping inflorescences are much longer than the leaves. Its racemes can be up to 14 inches (35 cm) long and are usually few-branched, bearing many large flowers that last for three to four weeks in late spring.

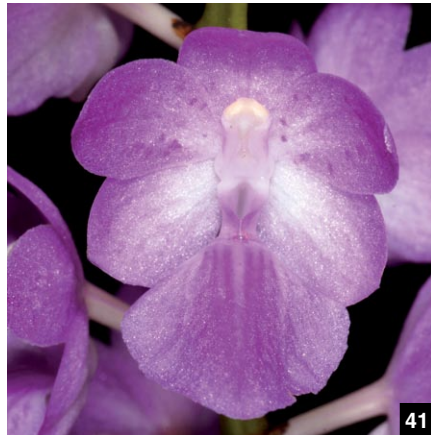
Being around 1–1½ inches (3–4 cm) across, the flowers of *Aer. crispata* produce a pineapple-like fragrance during the day. Its flowers are white, often flushed pink to rose-purple, particularly on the back of the sepals. The apices of the sepals and petals are usually tipped rose-purple. Its lip is pressed up close to the underside of the column. The white lip has the midlobe boldly marked apically with bright cerise to amethyst purple or deep rose purple. Its lip side lobes are striated with a similar color. *Aerides crispata* grows in exposed, seasonally dry conditions on the Western Ghats of southern India.

Aerides crispata var. *lindleyana* is a name that has been applied to some plants that have been raised from seed. I suggest that they are the same as *Aer. crispata* and that the name var. *lindleyana* is perhaps best treated as a cultivar or clone (*Aer. crispata* ‘Lindleyana’). My guess is that the original cultivar would not still be in cultivation. James Veitch (Veitch and Sons 1887–1894) described it as having “Peduncles branched. Flowers somewhat larger than in the type, the dorsal sepal, and petals tinted with light purple, the side lobes of the lip greenish, the middle lobe rich amethyst-purple, bordered with white.”

I recognize *Aer. crispata* f. *alba* as the rare form that has pure white flowers, lacking any pink or rose coloration.

Aerides section *Fieldingia*

Aerides krabiensis Seidenf. is a small-growing monopodial, lithophytic plant that produces attractive racemes of rose-purple blooms. It is closely related to *Aer. multiflora* Roxb. Plants often form vegetative growths from the base, eventually producing clumps. The stems are 3–4 inches (8–10 cm) long and are up to 8 inches (20 cm) long on old plants. Each stem bears many closely spaced strap-shaped leaves in two ranks. The



leaves are thick, v-shaped in cross-section and are 4–5½ inches (10–14 cm) long and ¼–½ inch (5–15 mm) broad. They are light green and may be flushed with purple when grown in bright light.

Arched, simple racemes, which rarely branch, are produced from the leaf axils. The racemes of *Aer. krabiensis* carry 12–15 small flowers along the rachis, which bends downward. Variable in color from rose to red-purple, the lateral sepals are often nearly white in the center, and the lip is generally deeper rose-purple. Its lip and lateral sepals are whitish at the base, and its flowers are unscented. Flowers may be a uniform pink color, and sometimes the petals may be spotted with purple. The late spring flowers of *Aer. krabiensis* open simultaneously to ¾ inch (2 cm) across, and they have broad, rounded sepals and petals giving the flower a filled-in shape.

Gunnar Seidenfaden described *Aerides krabiensis* in *Botanisk Tidsskrift* in 1971. He named it for the Isthmus of Kra, where the type was collected. *Aerides krabiensis* is endemic to the border region of Peninsular Thailand and Peninsular Malaysia and the islands off the west coast of Malaysia. It is found growing as a lithophyte on vertical limestone, where the plant is often exposed to full sun.

Species related to *Aer. krabiensis* with similar flowers are *Aer. rosea* Lodd. ex Lindl. and *Aer. multiflora* Roxb. Their larger, more-robust growth habit, and larger, more-succulent leaves immediately distinguish the latter two species.



[39] At around 1½ inches (4 cm) across, the flowers of *Aer. crispata* have a forward-pointing spur. Note the lip placement, close to the underside of the column.

[40] *Aer. crispata* grows in exposed seasonally dry conditions on the Western Ghats of southern India. An upright plant, *Aer. crispata* Lindl. has short leathery leaves, and arched to pendent racemes. The showy flowers of *Aer. crispata* are open in late spring, and they last for three to four weeks. The flowers produce a pleasant pineapple-like daytime fragrance.

[41] *Aer. krabiensis* has broad rounded segments giving the flower a filled-in shape. Endemic to the border region of peninsular Thailand and Malaysia, the unscented flowers, nearly 1 inch across open simultaneously in late-spring.

[42] *Aer. maculosa* as illustrated in the *Botanical Register*, was named for the pale sepals and petals that are spotted.

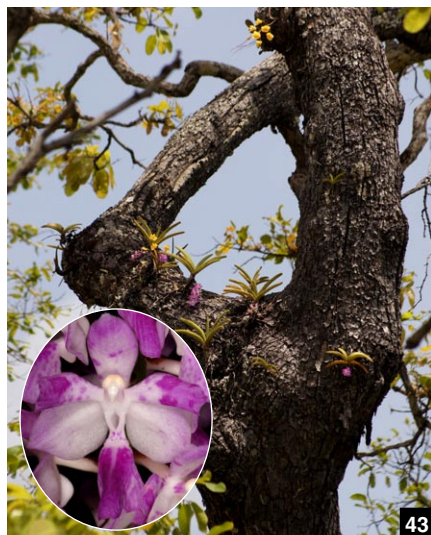
Aerides krabiensis seems to be easy to cultivate, but plants do not seem to flower regularly in the southeast Queensland area. David Banks (pers. comm.) has told me that that it grows well, but rarely flowers in Sydney, Australia. *Aerides krabiensis* is a warm grower, requiring high humidity and warm temperatures during winter. Bright light is also important for good flowering. Shading of 50–70 percent and good air movement seem to suit it well. It can be cultivated in a pot or basket using a coarse medium to ensure good air circulation around the roots. I recommend a winter minimum of 60 F (15 C).

Aerides maculosa Lindl. seems to be rare in cultivation. Eric Christenson (pers. comm.) told me that he had never seen it in the United States. I have never seen it in Australia or on my travels overseas. All seedlings and plants that I have seen labelled with this name have unfortunately flowered out as *Aer. rosea* Lindl. & Paxton. A photograph of *Aer. maculosa* appears in *The Manual of Cultivated Orchid Species* by Helmut Bechtel et al. (1992).

Aerides maculosa was described by John Lindley in the *Botanical Register* in 1845. Its specific epithet comes from the Latin “maculosus” (“full of spots”), referring to the spotted petals and sepals. Lindley did not mention that the leaves may also be spotted. *Aerides maculosa* is endemic to the Western Ghats of India, where it is found in seasonally dry deciduous forests between 2,625 and 3,940 feet (800–1,200 m) altitude. In some habitats, it grows alongside *Aer. crispa*.

A slow-growing, small to medium-sized, epiphytic (or sometimes lithophytic) plant, *Aer. maculosa* produces short stems. The stems are 1½–2½ inches (4–6 cm) long and bear several flat leaves in two ranks. Its generally curved, thick, fleshy, strap-shaped leaves are 6–9 inches (15–23 cm) long and 1–2 inches (3–5 cm) broad with rounded, bilobed apices. They are dark green and are spotted with purple on the outside near the base. When cultivated in bright light, the leaves may be prominently spotted with purple on the upper surface, as well as the underside. Plants produce pendulous inflorescences from the leaf axils, which are mostly few-branched, and bear many loosely spaced, fragrant flowers in summer. The inflorescences are longer than the leaves and are 10–16 inches (25–40 cm) long.

The highly fragrant flowers of *Aer. maculosa* are variable in size and may be up to 1½ inches (4 cm) long. The sepals and petals are white, flushed with rose, and



are spotted with red-purple. Sometimes the sepals may be immaculate with only the petals bearing spots. In addition, the sepals and petals may be tipped bright rose or amethyst. The lip is whitish at the base with small rounded, prominent, white side lobes that may be streaked with purple. Its large midlobe is amethyst purple to bright rosy purple, usually with paler margins. Its backward-pointing spur has a downward-pointing apex. The white column bears a yellow anther cap, while the spur apex is green. Long-lived flowers are produced in summer, and they last for about four to five weeks.

Aerides multiflora Roxb. was discovered in Sylhet by William Roxburgh and described by him in *Plants of the Coast of Coromandel* in 1820. The specific epithet is from the Latin “multi” (“many”) and “florus” (“flowers”), referring to the numerous, densely arranged blooms on the raceme. Later synonyms for *Aer. multiflora* include *Aerides affine* Lindl., *Aerides godefroyana* Rchb.f., *Aerides lobbii* Lem., and *Aerides veitchii* Hort. ex B.S.Williams. This species is widely distributed from the tropical Himalayas in Bangladesh and Bhutan, northeast India, and south to Myanmar, Laos, Thailand, Cambodia and Vietnam. In Bhutan, this species is found in secondary subtropical forests between 655 and 2,165 feet (200–660 m) elevation.

Aerides multiflora is a large monopodial, epiphytic plant that produces stout stems that are 4–10 inches (10–25 cm) long, bearing many leaves in two ranks. The tongue-shaped, channeled, and keeled leaves are curved and are 6–13½ inches (15–34 cm) long and ½–1 inch (1.5–2 cm) across. Its arched to pendulous inflorescence is 6–12 inches (15–30 cm) long and bears many flowers from late



[43] A large plant, *Aer. multiflora* Roxb. var. *godefroyana* (Rchb.f.) Veitch grows in dry deciduous forest. Plants have very thick, succulent leaves that are v-shaped in cross-section. Here plants are blooming alongside *Dendrobium lindleyi* in Thailand. The flowers of *Aer. multiflora* var. *godefroyana* (close-up) have a heart-shaped to trowel-oval-shaped lip and may be confused with *Aer. rosea*, however, the thick v-shaped leaves distinguish this species

[44] *Aer. multiflora* var. *multiflora* seems to be uncommon in cultivation.

spring to early summer. The inflorescence is generally a simple raceme, but may rarely be few-branched. The fragrant flowers are 1–1½ inch (20–32 mm) across and have sepals and petals that are white at the base, grading to rose pink or amethyst purple. Sometimes the tinted portion of these segments is spotted with two to three or more darker-purple spots. The heart-shaped to trowel-oval-shaped lip midlobe is a light amethyst purple and has an emarginate-truncate apex.

Eric Christenson (1993) said that there are two distinct varieties of *Aer. multiflora*. The type variety (var. *multiflora*), from northeast India, is an upland variant, which has evenly rose-pink flowers and leaves of typical thickness for the genus. It has much longer inflorescences than the other variety, and it prefers intermediate to cool conditions and has a reputation for being somewhat difficult to bloom.

The other variety is *Aer. multiflora* var. *godefroyana* (Rchb.f.) A.H.Kent, which was first described by the younger Reichenbach as *Aer. godefroyana* in the *Gardeners' Chronicle and Agricultural Gazette* in 1886. Adolphus Kent reduced

it to a variety of *Aer. multiflora* in *Manual of Orchidaceous Plants* in 1891. Kent commented that var. *godefroyana* is distinct in foliage from the typical type from India. He said that it had longer, more-leathery leaves with flowers that are structurally identical, but somewhat larger with broader segments and are more brightly colored. This variety occurs at lower elevations and in the eastern portion of its range. Variety *godefroyana* is distinguished by having white flowers with deep pink, prominent spots and marks on the sepals and petals. In addition, var. *godefroyana* has thick, succulent leaves, which are v-shaped in cross-section, and shorter racemes than var. *multiflora*. It thrives under hot conditions and appears to be easier to bloom.

Aerides multiflora may be confused with and is closely related to *Aer. rosea* Lindl. & Paxt. It is distinguished from that species by its different growth habit, the less-acuminate midlobe to the lip, and its differently colored flowers. Jeffrey Wood (Wood and Kennedy 1997) described the midlobe as being heart-shaped with an emarginate-truncate apex. Wood also pointed out that Gunnar Seidenfaden said that *Aer. rosea* is a much stouter plant.

Aerides rosea Lindl. & Paxton is sometimes more commonly known by its later synonym, *Aerides fieldingii* B.S.Williams. Thomas Lobb introduced it to cultivation for the firm of Veitch & Sons in 1850. Messrs. Loddiges bloomed the type specimen, and John Lindley described it in *Paxton's Flower Garden* in 1852. The specific epithet is from the Latin "roseus" ("rose, reddening"), referring to the color of its blooms. Benjamin Williams was responsible for describing it again as *Aer. fieldingii* in *Orchids and How to Grow Them in India* in 1875. Williams named this species in honor of Colonel Fielding, an officer in the Indian Army.

Aerides rosea is distributed from Sikkim and Assam states in northeast India to Myanmar, Thailand, Vietnam, Laos and southern China (Yunnan). Plants grow in habitats subject to a long dry season. In Bhutan, this species is found growing on tree trunks at around 5,000 feet (1,500 m) altitude.

A robust monopodial plant, *Aer. rosea* produces upright stems, which are 4–10 inches (10–25 cm) long. The stems are covered with overlapped leaf sheaths and bear 6–14 two-ranked, keeled, flat leaves at the apex. Its curved, tongue-shaped leaves are 6–14 inches (15–35 cm) long and 1–1¼ inches (2.5–4.5 cm) broad. The simple arched to pendent inflorescences



of *Aer. rosea* are 1½–2 feet (45–60 cm) and may even be up to 3 feet (90 cm) long. The inflorescences may have few branches near the base. They are densely many-flowered with blooms up to 1½ inches (37 mm) across, which are produced from late spring into summer.

The dorsal sepal and petals of *Aer. rosea* are amethyst purple, suffused with white and sometimes with the basal half white and dotted purple. The lateral sepals are white with a pale apical spot. The rhombus- to trowel-shaped lip midlobe with a rounded apex is amethyst purple and mottled white with a whitish spur. The semicircular lip of some examples seems rather distinctive. An examination of the types and further studies may prove that there could be two taxa involved. According to Peter O'Byrne (2001), the floral display for *Aer. rosea* lasts for about two weeks. Benjamin Williams (1894) noted that the blooms last for three to four weeks.

[45] *Aer. rosea* Lindl. & Paxt. is more commonly known by its later synonym, *Aer. fieldingii* B.S.Williams. The densely many-flowered inflorescences of *Aer. rosea* may be rarely few-branched near the base and are produced from late spring into summer. Plants of *Aer. rosea* such as the one in the upper left inset have been labelled as *Aer. maculosa*. *Aerides rosea* can be distinguished by its distinctly deltoid or trowel-shaped, acute or sharply pointed lip. The lip may also have a more rounded apex. Note also the flat leaves. The albinistic form, *Aer. rosea* f. *alba* is rare (lower right inset), and lacks the rose-pink coloration.

Aerides rosea f. *alba* (L.Linden) Christenson is the rare albino form, which has pure white flowers. Lucien Linden and colleagues first described this form as *Aer. fieldingii* var. *album* in *Lindenia* in 1896 (Linden et al. 1885–1898, 1894–1898).

Eric Christenson (1994) reduced it to a forma of *Aer. rosea*, in *Proceedings of the 14th World Orchid Conference*. Not only are the flowers pure white, but the leaves lack the purple coloration that is sometimes found in the leaves of the typical rose-colored form.

I have seen seedlings of *Aer. rosea* blooming during recent years that have been sold incorrectly as *Aer. maculosa*. *Aerides rosea* is closely allied to *Aer. multiflora*, but is distinguished by its distinctly deltoid or trowel-shaped to broadly acute or sharply pointed lip, as well as its flat leaves. In addition, the pedicel and ovary are greater than 1 cm (½ inch) long. *Aerides multiflora* has an obtuse, rounded labellum apex, the leaves are always v-shaped in cross-section, and the pedicel and ovary are less than 1 cm (½ inch) long.

CULTURE Hanging baskets or pots and using a coarse or well-drained medium is perhaps the best way of cultivating *Aerides*. This allows the thick, white roots to dry quickly between waterings and the mostly pendent racemes to display themselves well. Often the roots like to grow out in the air in an attempt to attach to their surroundings. Cultivate them in bright light. Plants will usually need some protection from full sunlight. Shading equivalent to 50–70 percent shade will usually be suitable for most tropical and subtropical regions. Growers in regions subject to reduced winter light could consider methods of increasing ambient light for that time of the year.

Soft, dark-green leaves and lack of flowers on mature *Aerides* are often an indication of insufficient light. If this is the case, then gradually reduce the shading over a period of two to four weeks, so that the leaves become olive green to apple green. If shading needs to be increased, then winter is an ideal time to do this. As mentioned previously, *Aer. leana* and *Aer. houletiana* can be cultivated in more shade than the other species. Ensure good air circulation and maintain high humidity, particularly during the warmer months. Inadequate air circulation may lead to fungal and bacterial problems. Good air circulation helps to dry the roots quickly after becoming wet.

Water the plants regularly while the root tips are green, and allow the roots to dry between waterings. The roots of *Aerides* have adapted to a wet–dry cycle, so their roots can easily rot if their needs are not met. Applications of liquid fertilizer will be beneficial when the plants are in active growth and while the root tips are

green. For best results, follow the fertilizer directions. Flush the pots or roots with water regularly between feedings.

As the root tips close over in winter provide *Aerides* that come from higher altitudes with a cooler, drier rest. Rest by stopping fertilizing and reduce watering frequency, but do not allow the plants to dry out for prolonged periods. During the cooler months, water or mist early in the day so that the leaves are dry by nightfall. I recommend a winter minimum of 55 F (12 C), but most species will tolerate lower temperatures for short periods, if the leaves are dry at night. Some of the lowland species, such as *Aer. lawrenceae* and *Aer. leana*, perform better with a winter minimum of 60–65 F (15–18 C) and with a rest period of less frequent watering. Again, air circulation is important at all times, particularly if the environment is enclosed for winter protection.

Acknowledgments

Thanks to David Banks for encouragement to write this article, which was first published in the *Australian Orchid Review* in 2002. It has been updated here, with the addition of six species that were not included when first published.

Thank you to the late Eric Christenson for the use of the illustration of *Aer. maculosa* from the *Botanical Register*. Also, thank you to Mark Clements for information about the Latin. I am also most grateful for help and advice from Jim Cootes and Alexander Kocyan, and thank Miguel David De Leon for use of his images, which accompany this article.

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Orchids of Bhutan

Cooler-Growing Vandaceous Species

BY STIG DALSTRÖM



WHEN THINKING ABOUT orchids in the subtribe Aeridinae, perhaps more familiar as “vandaceous” orchids, one may think of really warm-growing and sun-loving species from the hottest parts of the African and Asian tropics. This is a correct association, but not complete by any means. There are many vandaceous genera that grow at considerable elevations and some of them have very attractive interesting and long-lasting flowers. For orchid growers in colder climates these species may be good substitutes for the more heat-loving ones to cut some of the heating costs for the greenhouse. They may also be easier for those who grow orchids on the windowsill.

After having worked for more than a decade alongside the Thunder Dragon Orchid Team from the National Biodiversity Centre (NBC) in Serbithang, Bhutan, the author has had many opportunities to study some of these intermediate- to cooler-growing vandaceous orchids in the field. And field studies of orchids are always useful when it comes to understanding their environmental needs, which in turn are keys to a successful cultivation under artificial conditions. So here follows an assortment of orchid jewels from the heights of the Himalayas that are rarely seen in cultivation.

Cleisostoma williamsonii (Rchb. f.) Garay was originally described by Reichenbach (1865) as *Sarcanthus williamsonii* Rchb.f. Since then, it has accumulated no less than 16 synonymous names through the years (World Checklist of Selected Plant Families [WCSP] 2021). It is also quite possible that the current name will change again because many recent nomenclatural transfers have been based on molecular data rather than strict morphologic features. It is well known among taxonomists that flower shapes can be misleading, but plant shapes represent a more trustworthy key to generic relationships. And because the genus *Cleisostoma* Blume today consists of many species with drastically different-looking plant shapes, it seems inevitable that some reclassification will be necessary when additional genetic information becomes available.

In any case, *Cleis. williamsonii* was originally introduced from the state of Assam in India by the British wine merchant and orchid painter John Day, and apparently flowered for the first time in the cultivation of a Mr. Stone (Reichenbach 1865). In the original description Reichenbach compares this species with “*Saccolabium gemmatum*



Lindl.,” which today is called *Schoenorchis gemmata* (Lindl.) J.J.Sm., but distinguishes the former from the latter by some details in the column. *Cleisostoma williamsonii* has a wide area of distribution and is currently reported from NE India, Myanmar, China, Thailand, Vietnam, Malaysia, Sumatra, Java and Borneo (Pearce and Cribb 2002). In Bhutan this rather common orchid grows as an epiphyte or lithophyte, often exposed in full sun. Plants grow in seasonally very dry and seasonally very wet regions that can be thoroughly drenched by torrential rainstorms during the summer monsoon. Although being more of an intermediate growing species in terms of the temperature, *Cleis. williamsonii* is exposed to warm to hot days but seasonally much cooler nights and can be found between 2,400 and 6,000 ft (800–2,000 m) elevation (Pearce and Cribb 2002, Gurung 2006). The cultivation should therefore include a warm and wet summer in the northern hemisphere, and a much drier and cooler winter. This species should do well mounted on a piece of wood or tree fern, or possibly in a wooden basket with very coarse media where the long and semipendent stems can be allowed to hang freely on the outside.

Gastrochilus distichus (Lindl.) Kunze was originally described by John Lindley in 1858 as *Saccolabium distichum* Lindl., and it was based on a plant collected in Sikkim by Joseph Dalton Hooker. It was then transferred to the genus *Gastrochilus* D.Don by Karl Ernst Otto Kuntze in 1891, where it still resides today. The genus *Gastrochilus* is a large complex that not



- [1] *Cleisostoma williamsonii* in the natural habitat of the Trongsa province, Bhutan.
 [2] Flowers of *Cleisostoma williamsonii*.
 [3] Forest Ranger Ngawang Gyeltshen inspects the flowers of a *Cleisostoma williamsonii* growing lithophytically.

long ago consisted of about 20 species (Pearce and Cribb 2002), but today has increased to about 68 species, many of which are very recently described (WCSP 2021). Its members are widespread over much of tropical and subtropical Himalayas, Southeast Asia, China and adjacent islands.

Gastrochilus distichus is a miniature epiphyte with a pendent habit that often grows in rather shady conditions among mosses on trees and can be difficult to

discover. The flowers are relatively large for the plant but the spotting on the sepals and petals add some good camouflage. In Bhutan *Gchls. distichus* can be found at 4,500–8,400-ft. (1,500–2,800 m) elevation (Gurung 2006). Like all upper-elevation Himalayan subtropical orchids, it is exposed to a drastically wet summer monsoon from June to September, and a distinctly dry and much cooler fall–winter–spring season, lasting from November to May. In cultivation *Gchls. distichus* would probably do best mounted on a slab of cork bark, on tree fern or in a small wooden basket with a “classic” bark, charcoal and moss mixture.

Holcoglossum himalaicum (Deb, Sengupta and Malick) Aver., is a rather peculiar species with a nomadic nomenclatural history. It was originally described as “*Saccolabium himalaicum*” by the Indian team of Deb et al. (1968), and was based on a plant collected by Shalik Mokin (No. 13) from “upper Burma” (Myanmar). But what appears to be the same species had already been discovered in Yunnan, China, by M. K. Li (No. 1798) in 1939, and was later described by Zhan Huo Tsi as *Holcoglossum junceum* Tsi (Tsi 1982). Eric A. Christenson transferred *Saccolabium himalaicum* to *Ascocentrum himalaicum* (Deb, Sengupta and Malick) Christenson in a revision of *Holcoglossum* Schltr. (Christenson 1987). The following year, however, both Averyanov (1988) and Senghas (1988) independently transferred “*Saccolabium himalaicum*” to *Holcoglossum himalaicum* instead, with Averyanov unknowingly beating Senghas to it. And in 2012, Lauren Maria Gardiner transferred this species to *Vanda himalaica* (Deb, Sengupta and Malick) L.M.Gardiner (Gardiner 2012, Dalström et al. 2015). This latter transfer was unfortunately the result from an incomplete DNA sequencing project regarding the genus *Vanda* R.Br. Genetic studies of members in several genera that previously were treated as taxonomically distinct revealed that they all could be transferred to an extended *Vanda* complex. This included the members of the genus *Ascocentrum* Schltr., among others, and because our “*himalaicum*” orchid was included in that particular genus at the time (by some), it was transferred to *Vanda* as well, despite that no secured DNA data were available. In other words, the transfer was based on floristic (and “nomenclatural”) features alone (Gardiner, pers. comm.). As far as we know, DNA data of this rare species are still not available. The placement of this odd species in *Holcoglossum*, however, seems



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- [4] *Gastrochilus distichus* flowers seen from below.
- [5] A “handful” of *Gastrochilus distichus* from the Punakha province in central Bhutan.
- [6] *Gastrochilus distichus* in situ in the Tashigang province of eastern Bhutan.
- [7] The natural habit of *Holcoglossum himalaicum* in the Trongsa province of central Bhutan. Both plant and inflorescence have a distinctly pendent habit and the bright pink flowers do not open fully.
- [8] *Papilionanthe uniflora* flowering in the Royal Botanic Garden, Serbithang, Thimpu, Bhutan.

more likely, based on the plant habit and also the basic flower morphology. The rather unique dense plant habit, with up to more than a yard long (1 m) long and strictly pendent rat-tail leaves readily separates *Holc. himalaicum* from all other vandaceous species that are known from Bhutan, where it flowers in October–November. This orchid definitely needs to be mounted on a piece of wood, bark or tree fern, or in a small wooden basket in order for the long rat-tail leaves to develop properly. The culture should be similar to the sympatric *Gchls. distichus* (see above).

The genus *Papilionanthe* Schltr. consists today of about 10 accepted species (WCSP 2021). This rather distinct genus is distributed over much of the tropical and subtropical Himalaya, India, SE Asia, China and Malesia. We find four species in Bhutan, with the enigmatic *Papilionanthe greenii* W.W.Sm., which has never been seen alive in Bhutan, and the more common *Papilionanthe teres* (Roxb.) Schltr., which possibly should be called "*Papilionanthe subulata* (J.Koenig) Garay" (Pearce and Cribb 2002, Seidenfaden 1995), but that is a nomenclatural mess that we can avoid here. Both of these species occur in the warmer (seasonally super hot) lowland area along the Indian border and are therefore not included here. *Papilionanthe uniflora* (Lindl.) Garay and *Papilionanthe vandarum* (Rchb.f.) Garay, on the other hand, are species that occur at higher and cooler elevations. *Papilionanthe uniflora* was originally described by Lindley as *Mesoclastes uniflora* Lindl., based on a plant collected in the Gossain Than region in Nepal by the Danish physician and botanist Nathaniel Wallich, or by one of his collectors (Lindley 1830). This species was then transferred to *Luisia uniflora* (Lindl.) Blume in 1849. It was later transferred to *Aerides uniflora* (Lindl.) Summerhayes in 1956, and finally to *Papilionanthe uniflora* in 1974 by Leslie Garay. As the name "*uniflora*" suggests, this slender species generally displays a single pure white flower of extraordinary elegance, but occasionally carries two or three per inflorescence. The pendent plant has elongated and terete stems with slender rat-tail leaves. Cultivation should be the same as for the previous species.

Papilionanthe vandarum is more commonly seen than *Ple. uniflora* and occurs as an epiphyte in oak and *Rhododendron* dominated forests throughout Bhutan at elevations of 3,900–5,400 ft (1,300–1,800 m) (Gurung 2006). In contrast to its smaller and



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single-flowered "cousin," *Ple. vandarum* has generally up to a handful of stunning flowers per inflorescence. *Papilionanthe vandarum* has also a rather complex taxonomic background. A flowering plant that had been cultivated by a Mr. Parker, of Hornsey, UK, was brought to William Jackson Hooker at Kew, in February of 1857. This plant was featured in *Curtis's Botanical Magazine* with a colored plate the same year. Unfortunately, there is no information included where this particular plant originated from before it ended up in Mr. Parker's greenhouse. But according to Hooker (1857), John Lindley referred this plant to his "*Aerides cylindricum* Lindl.," which was based on Nathaniel Wallich's collection number 7317 (Lindley 1832), which in turn refers to a "*Cymbidium cylindricum* A. Meza," which supposedly was a plant in the Scottish surgeon-turned botanist Robert Wight's herbarium (Wallich's numeral list 1828). An illustration of "*Aerides cylindricum*"

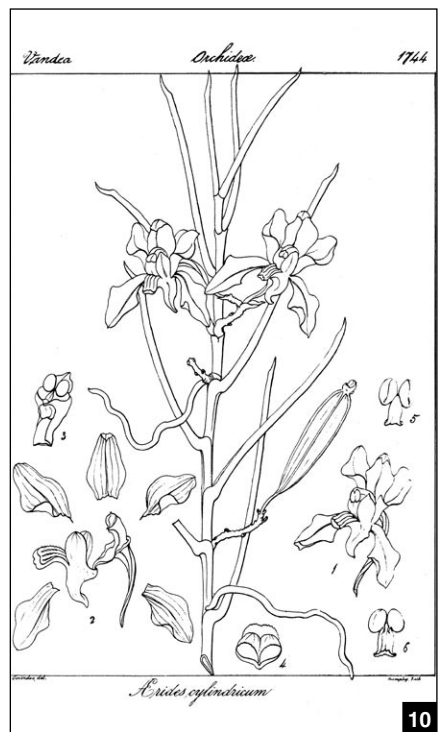


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(today accepted as *Papilionanthe cylindrica* (Lindl.) Seidenf.), was published in Wight's *Icones Plantarum Indiae Orientalis*, plate 1744 (Wight 1851). It is uncertain whether the voucher for this particular illustration also represents the holotype of *Ple. cylindrica*, but it is assumed here that they at least represent the same species. The voucher plant for the illustration appears to have come from "Jyamally Hills, Coimbatore" in southeast India (Wight 1851, Hooker 1857). In any case, and despite Lindley's and Hooker's belief that these two illustrated orchids represent the same species, we cannot avoid noting the considerable differences in the flower structure, as well as in the major area of distribution, as we know it today. The plant of unknown origin and illustrated in the *Botanical Magazine* clearly represents the same species that we can see in Bhutan today and what is referred to as *Ple. vandarum*. The plant described by Lindley and illustrated in Wight's publication, on the other hand, has a much shorter lip without the apical extensions and with broadly rounded lateral lobes of the lip, versus obliquely bilobed and elongate acuminate lateral lip-lobes for *Ple. vandarum*. Reichenbach also recognized these differences and writes in his original description of *Aerides vandarum* (1867): "It is astonishing how long an error may last. A single glance at the figures in the *Bot. Mag.* And in *Wight's Icones*, vol. V, tab 1740 [sic. 1744], show how different the plant above named is from *A. cylindricum*." ... "We do not know whence the novelty [*A. vandarum*] comes" (Reichenbach 1867). Today we know that it comes from Bhutan, northeast India, Myanmar and southern China (Pearce and Cribb 2002).

Schoenorchis gemmata (Lindl.) J.J.Sm., was scientifically described by Lindley (1838) as *Saccolabium gemmatum* Lindl. It was then transferred to *Schoenorchis gemmata* by Johannes Jacobus Smith in 1912, where it remains today. The original plant was discovered in 1837 on the "Khossea" (Khasi) Hills in the Indian state of Meghalaya by Alexander Gibson, a Scottish surgeon and botanist who worked for the "Honourable East India Company." Gibson's plant was then brought to the Duke of Devonshire, in whose collection it flowered in May (Lindley 1838). Lindley does not seem to have been impressed by the size of the flowers "not being larger than the size of a mustard seed," but he liked the colors being "the finest amethysts are not of a more brilliant purple, and the tips of the



labellum and sepals are quite white" (Lindley 1838). This miniature orchid is relatively common in Bhutan, where it is sympatric with *Cleis. williamsonii* and several others of the species included here. It has a wide area of distribution, similar to *Cleis. williamsonii*, and grows as an epiphyte or lithophyte at 2,500–6,000-ft. (830–2,000 m) elevation (Pearce and Cribb 2002). It should be cultivated in a similar fashion as for *Cleis. williamsonii*.

Taeniophyllum retrospiculatum (King and Pantl.) King and Pantl., may not be the most obvious choice plant for orchid growers. It does have a certain charm in its miniature size and peculiar leafless habit, though, with fleshy roots taking over the photosynthesizing process. This insignificant orchid was originally described by King and Pantling (1898) and featured with an illustration in their *The Orchids of the Sikkim-Himalaya*. The lengthy specific name for this minute orchid refers to the tip of the acute lip being folded back for some unknown reason (difficult to see even in a photograph). *Taeniophyllum retrospiculatum* is known from various locations throughout Bhutan, at 3,900–7,200 ft (1,300–2,400 m) elevation (Gurung 2006), where it grows as an epiphyte on a variety of host trees. Most species in this genus are very small but the genus itself can boast with about 242 species (WCSP 2021), distributed from tropical Africa throughout tropical Asia to Australia and the Pacific Islands. Needless to say, with a distribution this large and



[9] *Papilionanthe vandarum*, as "*Aerides cylindricum*" in *Curtis's Botanical Magazine* 13, tab. 4982, 1857.

[10] *Papilionanthe cylindrica*, as "*Aerides cylindricum*" in *Icones plantarum Indiae Orientalis* 5: 1744. 1851.

[11] *Papilionanthe vandarum* flowering in the Royal Botanic Garden, Serbithang, Thimphu, Bhutan.

with so many species there may be good reasons to make a closer study when molecular research has done its "magic." Considering how small and difficult to find

these plants are, such a treatment will probably not be made available anytime soon. The general cultivation of more-or-less leafless orchids can perhaps be described as adding a lot of water during the growing period and provide a much drier and generally cooler resting season, whenever it happens. As far as light requirements go, these tiny root tufts are probably best kept in a rather humid and semishady location.

Thrixspermum japonicum (Miq.) Rchb. f., is an attractive and rather enigmatic miniature species that is readily accepted in publications under that name (Ohwi 1965, Maekawa 1971, Hashimoto 1981, Wu and Hong 2009, WCSP 2021). It is also known and accepted as *Thrixspermum pygmaeum* (King and Pantl.) Holtum (Averyanov 2006, Lucksom 2007, Vuong et al. 2017, WCSP 2021). Despite the fact that these two species are virtually identical and have an overlapping distribution, they have not been compared with each other in any of the here-cited publications. Why that is, is a mystery, but it may be due to a lack of access to publications, illustrations or live and preserved plant material. The former name refers to a species known from Japan, obviously, but also from southern China and Korea. The latter name refers to a species that is reported from the Himalayan region, in addition to southern China, Vietnam, Taiwan and Japan (WCSP 2021). When available photos and live and preserved plant material of what supposedly represent both of these taxa is compared the inevitable conclusion is that they are identical and represent the same species. *Thrixspermum japonicum* was described in 1866 by the German-born botanist Friedrich Anton Wilhelm Miquel, who spent his professional career in the Netherlands. The type plant was collected in Japan by the apparently quite imposing and controversial German physician and botanist Philipp Franz von Siebold. This earlier publication date has nomenclatural priority over *Tx. pygmaeum*, which was described from Sikkim, India, by George King and Robert Pantling (1898). Apparently, these latter gentlemen only saw a single specimen once but did not know where it came from. This attractive little orchid is not commonly seen in Bhutan even today, and was only reported from the Punakha province by Nicholas Pearce and Phillip Cribb in *The Orchids of Bhutan* (Pearce and Cribb 2002). Four years later it was known from a single locality in the Trongsa province by Dhan Bahadur Gurung (2006). But once



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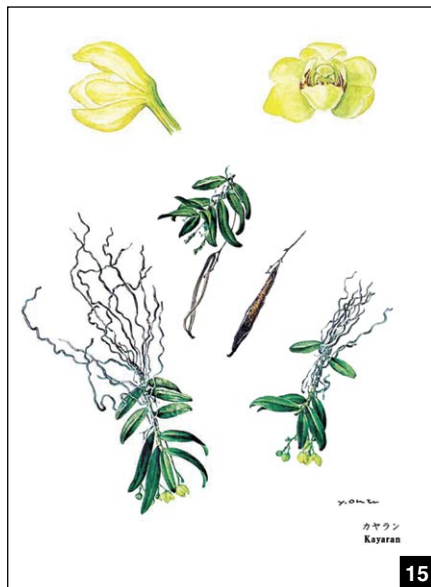
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- [12] *Schoenorchis gemmata* in situ near Dungkar, in the Lhuentse province of northeastern Bhutan. The small flowers (inset) are the size of a mustard seed.
- [13] *Taeniophyllum retrospiculatum* plants are hard to see hiding among lichens near Joengkhar, in the Trashiyangtse province of eastern Bhutan. *Taeniophyllum retrospiculatum* (photographed against the author's thumb for comparison [upper inset]) is what is considered a "botanical" species. Some would argue that is the scientific term for "little and ugly," although the individual flowers are quite pretty.
- [14] *Taeniophyllum retrospiculatum*, in *The Orchids of Sikkim-Himalaya, Annals of the Royal Botanic Garden, Calcutta*, pl. 324. 1898.

its preferred habitat was successfully identified, as a twig epiphyte in semishady conditions at elevations from 3,900 to 7,200 ft (1,300–2,400 m) (Gurung 2006), this attractive orchid has been easier to find, dwelling inside bushes or on thin branches in smaller trees. For this reason, *Tx. japonicum* should probably be best grown under similar conditions mounted on a thin branch or in a small wooden basket with very little medium, similar to its larger “cousins” in the genus *Vanda*. During the warm summer monsoon from June to September this orchid receives huge amounts of rain, and during the fall–winter–spring months of October to May plants are exposed to much drier and cooler conditions.

Vanda cristata Wall. Ex Lindl. was originally called “*Aerides cristatum*” by Nathaniel Wallich, and it was based on a plant that had been collected by him or by one of his collectors in Nepal. According to John Lindley, however, this name was never validly published. So, when Lindley eventually had access to Wallich’s herbarium, which was deposited at the Linnean Society facility in London at the time, he officially described it as *Vanda cristata* (Lindley 1833). The specific name refers to the “cristated” keels on the lip. *Vanda cristata* may not be one of the most attractive members of the genus, and the flowers do not have a lot of color or elegance. But what it lacks in those regards it makes up for with its cold tolerance, relatively compact habit, and long-lasting, fleshy, and highly variable bizarre-looking flowers. Some of this variability is probably due to natural hybridization with *Vanda alpina* (Lindl.) Lindl. (of which *Vanda griffithii* Lindl. is considered to be a synonym here; Dalström et al. 2015b). *Vanda cristata* is an epiphyte or lithophyte and occurs throughout the tropical and subtropical regions of the Himalaya, Southeast Asia and China, at 2,400–6,000-ft (800–2,000 m) elevations (Gurung 2006). A suggested culture would include a wooden basket and a very coarse and open medium, in good light and in intermediate temperatures. Because of the monsoon-dominated climate, lots of water should be given during the summer months and much less during the winter months when the temperature drops significantly as well.

Vandopsis undulata (Lindl.) J.J.Sm., was originally described in 1858 by John Lindley as *Vanda undulata* Lindl. The type plant had been collected in Sikkim by John Ferguson Cathcart, a British botanist living



in India at the time. Apparently, Cathcart had this plant illustrated as well. Heinrich Gustav Reichenbach then transferred it to *Fieldia undulata* (Lindl.) Rchb.f., in 1862 because he realized that the lip structure in this orchid was different from that in both *Renanthera* Lour., and *Vanda* (Reichenbach 1862). Reichenbach admitted that he had not seen any real material of this species, just the drawing that was made by Mr. Cathcart’s artists. The genus *Vandopsis* Pfitzer has today four accepted species: *gigantea* (Lindl.) Pfitzer, *lissochiloides* (Gaudich.) Pfitzer, *shanica* (Phillimore and W.W.Sm.) Garay and *undulata*, but no less than 24 synonyms (WCSP 2021). *Vandopsis undulata* is a widespread, upper elevation, rather sturdy orchid with attractive flowers. It is recorded from northern India and Nepal in the west, throughout the upper elevation subtropical mountain forests of Myanmar

[15] *Thrixspermum japonicum* as “*Sarcophilus japonicus*” in *The wild orchids of Japan in colour*, pl. 183.

[16] *Thrixspermum japonicum*, as “*Sarcophilus pygmaeus*” in *The Orchids of Sikkim-Himalaya*, *Annals of the Royal Botanic Garden, Calcutta*, pl. 277. 1898.

[17] *Thrixspermum japonicum* in situ in the Punakha province of central Bhutan.

and Vietnam to China. It occurs in Bhutan throughout the country at 4,500–6,900 ft. (1,500–2,300 m) elevation (Gurung 2006) and flowers in April–May. It is a rather common orchid and appears to be “tough to kill” even in rather “unfriendly” artificial conditions. *Vandopsis undulata* is an erect and climbing epiphyte that is frequently found growing in relatively shady conditions but also high up in a variety of trees where it is exposed to a

lot of light.

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- [18] *Vanda cristata* as an epiphyte near Dungkar in the Lhuentse province of northeastern Bhutan. Inset close-up of *Vanda cristata* growing on a large boulder near Gedu in the Chukha province in western Bhutan.
- [19] *Vandopsis undulata* in situ near Dungkar in the Lhuentse province of northeastern Bhutan. Photo by Stig Dalström. Flowers of this easy growing species (left inset) are rather striking. A predatory spider has adapted to the coloration inside the flower (right inset).

Vandaceous Hybridizing at R.F. Orchids

BY ROBERT FUCHS



FUCHS

MY INTEREST IN vandas and their relatives has been a lifelong passion. These stunning orchids bloom in a wider range of colors and patterns than any other group, and I have devoted decades to breeding better vandaceous orchids. But what constitutes better vandas? Classic vandas generally have large flowers, but the plants are usually large as well, often too large for growers without big greenhouses. Most of the classic hybrids come in a limited range of colors and many bloom only once a year — twice, if you are lucky. So, my goal has always been to create hybrids with relatively large, long-lasting flowers on smaller plants, in clear, vibrant colors, and to see these improved flowers bloom several times a year. Ideally, I want to overcome the shortcomings of the ancestral species by using combinations that present the best qualities and diminish the less desirable ones.

Classic vandas have two main species in their ancestry, *Vanda sanderiana* and *Vanda coerulea*, with distant influences from just a few other species in the genus. *Vanda sanderiana* is a large plant with large flowers but the inflorescence is typically crowded and, while the flowers are usually round and flat, there is a distinct difference in the size of the flowers from the bottom to the top of the inflorescence. The substance can be good, and the color and pattern, in the best examples, are very attractive. *Vanda coerulea*, on the other hand, has much better flower spacing on a longer inflorescence, but the substance is typically thin. In the best cultivars, the intense blue-violet color and beautiful tessellated markings are extremely desirable.

The primary hybrid of the two is *Vanda Rothschildiana*, which was originally made in Europe in 1931. This cross has been remade many times using improved parents, and many cultivars have been awarded. Generally, the floral presentation is better than in either parent, and the colors are quite attractive. There are even pink forms descended from the rare pink *V. coerulea*.

Over the decades, hundreds of *Vanda* hybrids have been registered using combinations of the same parents in an attempt to increase the flower size and improve color and spacing on the inflorescence. But this line of breeding did not do much to reduce the plant size, which was always one of my goals, nor did it add any significant change to the limited color palette of the hybrids. For many years, vandas came in basically



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three colors: pink (or two-tone, like *V. sanderiana*), blue or blue-purple, and yellow. We could — and did — improve these colors, producing hybrids with intense raspberry flowers, grape-purple flowers, and clear yellow flowers. Some examples are *Vanda* Adelaide Skoglund ‘Crownfox’ HCC/AOS (deep raspberry), *Vanda* Diana Tamayo (dark purple), and *Vanda* Jodi Zifferer (clear yellow). But they are the same large-flowered, pink/blue/yellow vandas on large plants, blooming once or maybe twice a year.

Growers and judges put a high value on large flowers. Increasing the flower size is not all that difficult. We used the largest-flowered cultivars as stud plants and, over multiple generations, increased the flowers’ width and length. But this did not do anything for the plant size.

Decreasing the plant size is easy, too, using the appropriate stud plants, but the biggest gains in this direction came from introducing smaller-growing species into the mix. The trade-off, however, is smaller flowers. The best of the smaller-growing species are several of the

- [1] *Vanda* Frances Lindner ‘Crownfox’ FCC/AOS (Ellen Wells × Crownfox Keylime); exhibitor: R.F. Orchids, Inc.; photographer: Nick Nickerson.
- [2] *Vanda sanderiana* ‘Athena’ AM/AOS; exhibitor: R.F. Orchids, Inc.
- [3] *Vanda coerulea* ‘Orchid Dynasty’ CCE/AOS; exhibitor: Orchid Dynasty.
- [4] *Vanda coerulea* ‘Crystelle’ FCC/AOS; exhibitor: Krull-Smith.
- [5] *Vanda* Adelaide Skoglund ‘Crownfox’ HCC/AOS (Dona Rome Sanchez × Fuchs Violetta); exhibitor: R.F. Orchids, Inc.

former ascocentrums, particularly *Vanda curvifolia*, *Vanda garayi* and *Rhynchostylis coelestis*. Taxonomic changes in 2012 moved *Ascocentrum* into *Vanda*, so all the ascocenda hybrids are now vandas. Although they are classified as vandas now, I will use *Ascocenda* to distinguish those hybrids that include one or more of the former *Ascocentrum* species in the pedigree, as the influence of those species is important for some of our breeding goals.

Like many breeders, we experiment with many hybrids, and often the results are very, very good. Although the flowers are smaller, there are a lot more of them, in significantly brighter colors, and many of these hybrids can and do, with appropriate care, bloom multiple times a year. Plant size is also greatly reduced. Of course, the ever-present desire for larger flowers means crossing them back onto large-flowered vandas, so plant size started to increase again, but many maintained a manageable size.

We also saw the appearance of many new colors in the hybrids and some very attractive patterns, too. Now we have orange and red vandas, some with spots and contrasting colors. *Rhynchostylis coelestis* hybrids (*Vascostylis* at one point, *Vandachostylis* now) have beautiful upright, cylindrical stems of well-shaped flowers in bright colors on moderately sized plants. The sheer number of flowers offsets the smaller size. Again, it is possible to breed larger flowers in these hybrids, but the plant size starts to increase, too.

Spotted ascocendas were all the rage about 15–20 years ago, and there are many fine examples of this trend in hybridizing. Most of them tend to have yellow or orange flowers with darker red-orange or even brick-red spots. Because they are popular, we continue to make a few of these crosses. One of our more recent hybrids in this line is *Vanda Frances Lindner* (Ellen Wells ‘Crownfox’ AM/AOS × Crownfox Key Lime ‘Xena’ AM/AOS). One cultivar, ‘Crownfox Orange Glow’ FCC/AOS was honored with the AOS’s Merritt Huntington Award in 2014.

The introduction of the *Ascocentrum* species brings many positive new traits to vanda hybridizing, including floriferousness. We always look for more flowers, and many of these hybrids fit this bill.

“Classic” vandas average 8–10 flowers per inflorescence, while, in the early hybrids, ascocendas average 20–40 flowers per inflorescence. Some *Vandachostylis* hybrids, with the influence



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- [6] *Vanda (Ascocentrum) curvifolia* ‘Crownfox’ CCM/AOS; exhibitor: R.F. Orchids. Inset close-up ‘Adkin’s Crimson Cutie’ HCC/AOS grown by Adkin’s Orchids.
- [7] *Vanda (Ascocentrum) garayi* ‘Orange Pixie’ HCC/AOS; exhibitor: Alfred Hockenmaier.
- [8] *Rhynchostylis coelestis* ‘Sweet Linda’ AM/AOS; exhibitor: Krull-Smith.
- [9] *Vanda denisoniana* ‘Shirley and Selig Golden’ AM/AOS; exhibitor: Juraj Kojcs.
- [10] *Vanda tessellata* ‘Naoki Kawamura’ AM/AOS; exhibitor: Naoki Kawamura.

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of *Rhy. coelestis*, can bloom with even more flowers and the plants are typically quite compact compared to the standard classic vandas.

We also consider temperature tolerance. Most classic vandas are warm growing, which is not an issue for growers in south Florida or in Hawaii, but it is a major challenge for most orchid enthusiasts elsewhere. Using some cooler-growing species in breeding programs can help improve temperature tolerance. *Vanda coerulea*, which is more of an intermediate grower than *V. sanderiana*, has been used for more than 100 years, not only for color and flower spacing, but also for temperature tolerance.

Several other *Vanda* species are more temperature tolerant than *V. sanderiana* including *Vanda denisoniana* and *Vanda tessellata*. Several of the former *Ascocentrum* species, notably *Vanda ampullacea*, are slightly more cool tolerant than typical vandas (although this species has not been used much in hybridizing), and *Rhy. coelestis* also imparts some temperature tolerance as well.

The most cool-tolerant of all is *Neofinetia*, now *Vanda falcata*, a compact grower native to Japan. It was dominant for flower shape in the first generation, but subsequent generations show less dominance. *Vandachostylis* (*Neostylis*) Fuchs Ocean Spray (*Van. Lou Sneary* × *Rhy. coelestis*) is an example. Another bonus, in addition to plant size, is the fragrance of the hybrids of *V. falcata*. Fragrance is always desirable, and, unfortunately, many typical *Vanda* hybrids are not particularly fragrant. We also used *V. tessellata* to produce fragrant, more temperature-tolerant hybrids, but the fragrance is sometimes lost one generation or two after the original cross.

I have had a longtime interest in intergeneric hybridizing, so in addition to vandas and *Vandachostylis* hybrids (*ascendas* × *Vascostylis*), we have produced many vandaceous intergenerics using *Aerides* and *Renanthera* species, and more recently, *Vanda* (*Christensonia*) *vietnamica*.

Intergeneric hybridizing in the vandaceous alliance has a long history, going back to the mid-1940s, but these early hybrids used some of the smaller-flowered *Aerides*. I preferred to breed with *Aerides lawrenceae*, which is the largest plant and flower in the genus. That affects plant size in the progeny but many of the hybrids have beautiful, waxy, fragrant flowers. I observed that *Aer. lawrenceae* tends to suppress the



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[11] *Vanda ampullacea*, a variable species, comes in a number of color forms ranging from pure white through shades of pink to dark fuchsia and even orange. Pictured: upper left: 'Smichael and Maxie' HCC/AOS; exhibitor: So Burke; photographer: Wilton Guillory; upper right: 'Brent Puczko' CCM/AOS; exhibitor: Silva Orchids; photographer: Charles Marden Fitch; center: 'Crownfox Pink Glow' CCE/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas; lower right: 'Crownfox' CCM/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas and lower left: 'Crownfox Candy' AM/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas.

[12] *Vanda* (*Neofinetia*) *falcata* 'Shutenno' AM/AOS; exhibitor: Nathan Bell.

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color in some crosses with *Vanda*, so that the results are more muted pastels. Nevertheless, they can be gorgeous. However, many *Aeridovanda* hybrids are sterile, so breeding with them is a bit of a dead end.

We also made some beautiful *Christieara* hybrids (*Vanda* × *Ascocentrum* × *Aerides*); these are mostly aeridovandas now, but nearly all of them are sterile, too, so that line of hybridizing is uncommon today. It is unfortunate they are sterile, because the introduction of the *V. curvifolia* into the mix gave us a wonderful palette of color, easily overriding the muting influence of the *Aer. lawrenceae*, and reducing the plant size, too. There are some fabulous *Christieara*–*Aeridovanda* hybrids on the books, and we have many awarded.

We had great success with improving color in vandas, moving on from the early two-tone pinks and tessellated blues to really intense, solid fuchsia, deep garnet-red, gorgeous grape-purple and clear chrome-yellow, but this was still more or less the same palette, if greatly improved. Adding *V. curvifolia* to the hybrids gave us warmer reds, oranges and some new patterns, but what else could we do to expand the color range?

In breeding cattleyas, it has long been known that crossing yellows onto purples would intensify the purple colors. But in vandas, the result of this kind of cross was, more often than not, disappointing. That is a polite way to say “muddy,” and the hybrids were not registered. But Pure Orchid Farm, a breeder in Thailand, crossed *Vanda* Fuchs Gold with *Vanda* Gordon Dillon and registered the cross as *Vanda* Copper Pure in 2002.

Now this was an interesting cross, as not all the progeny were muddy. We gave some thought to crossing yellows with purple and pinks to see what would result. Maybe the trick was using the right stud plants. We began to explore the possibilities of these combinations. In 2004, we registered *Vanda* Betty Baderman, a cross of (Barbara Krantz × Crownfox Beauty). But the breakthrough cross, registered in 2006, was *Vanda* Fuchs Sunrise × *Vanda* Doctor Anek (both proven stud plants in other breeding lines). We registered this hybrid as *Vanda* Judy McKemie. We saw new “art shades” of copper and bronze, and two cultivars have received flower-quality awards from the AOS. This was an interesting development in vanda flower color and some other “experimental” crosses began to bloom. In 2007, we registered *Vanda*



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Crownfox Avocado Honey, a cross of (Siam Spots × Doctor Anek). This hybrid received an AQ/AOS in 2008 and five cultivars have received flower-quality awards from AOS.

In 2011, we registered *Vanda* Ken Slump, a cross of (Crownfox Yellow Sapphire × Crownfox Goliath). Several cultivars were awarded by the AOS including 'Crownfox' AM/AOS in 2013, and 'Joburg' GM/21WOC in 2014 at the 21st World Orchid Conference. Unfortunately, we do not have a good image of 'Joburg' but the cultivar 'Africa' is similar to the gold medal winner at the 21st WOC in Johannesburg.

In 2011, we also registered *Vanda* Robert Moraru, which is (Crownfox Gold × Doctor Anek). The cultivar 'Pomegranate' AM/RHS was recognized during the 2016 Chelsea Flower Show. More recently, our cross of *Vanda* Will Riley (Crownfox Gold 'Elegant' FCC/AOS × Crownfox Goliath 'Full Moon' AM/AOS) received an AQ/AOS at a local show in April 2017. The Award of Quality is awarded once to a strain (the result of a mating of specific cultivars), exhibited by a single individual as a group of not less than 12 different clones. At least one cultivar of the exhibited strain must receive, or have received, a flower-quality award. Four of the plants in the group of 12 received individual flower-quality awards: *V.* Will Riley 'Crownfox' FCC/AOS, 'Bonnie' FCC/AOS, 'Crownfox Pink Lemonade' AM/AOS and 'Crownfox Raspberry' AM/AOS.

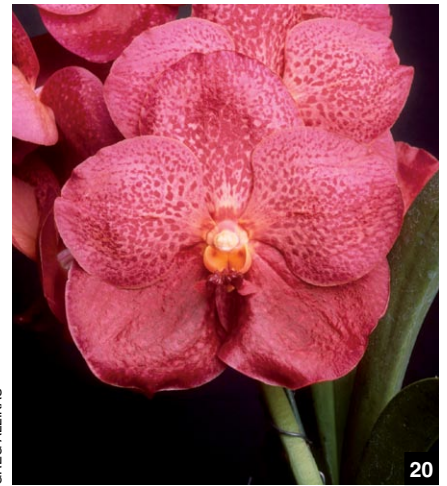
In 2019, our cross resulting in *Vanda* Barbara Walker (Susan Best × Bruce Danforth) received six AM/AOS awards and an AQ/AOS award. Working on this line of breeding produced unusual colors. This is what we have been working on for the last couple of years. Our latest hybrid, *Vanda* Nanette Zapata (Barbara Prozzillo × Adelaide Skoglund) received an AQ/AOS, two FCC/AOS and three AM/AOS awards.

This relatively new line of vanda breeding, crossing classic deep-pink or two-tone flowers with yellow flowers, has produced some incredible new colors in large-flowered vanda hybrids. We have received dozens of flower-quality awards from the AOS and RHS on these hybrids. The new copper and bronze shades have proven to be extremely popular and certainly make an interesting change from the classic pinks, blues and yellows.

So, what have we accomplished in nearly 50 years of hybridizing vandas and their relatives? We have larger, better-formed flowers such as *Vanda* Robert's Delight 'Garnet Beauty' FCC/ AOS as well as on smaller plants such as *Vanda* F.S.U.



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(Virginia Vercillo × Crownfox). We have more flowers, more often, such as with *Aeridovanda* Christine Patton. We have new colors and patterns that are seen on the *Aeridovanda* Carlos Manuel Rivero.

Looking back, I think we have accomplished a lot. There is still more to do, and we will continue to pursue improved vandaceous hybrids. The plants are still larger than we would like and adding fragrance to the hybrids would be

- [13] *Van.* Fuchs Ocean Spray 'Sierra Sky' HCC/AOS; exhibitor: Gold Country Orchids.
- [14] *V.* (*Christensonia*) *vietnamica* 'Lily' HCC/AOS; exhibitor: Sandra Higham.
- [15] *Aer. lawrenceae* 'Crownfox Velvet' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [16] *Aer*dv. Tzeng-Wen Happy 'Kathy Chandler' AM/AOS; exhibitor: Thomas G. Coffey.
- [17] *Aer*dv. Carlos Manuel Rivero 'Crownfox' AM/AOS; exhibitor: R.F. Orchids, Inc.
- [18] *Aer*dv. Barney Garrison 'New York' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [19] *V.* Copper Pure 'Crownfox' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [20] *V.* Betty Baderman 'Crownfox' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [21] *V.* Judy McKemie 'Crownfox Pomegranate' AM/AOS; exhibitor: R.F. Orchids, Inc.
- [22] *V.* Crownfox Avocado Honey 'Blood Moon' AM/AOS; exhibitor: R.F. Orchids, Inc.
- [23] *V.* Ken Slump 'Crownfox' AM/AOS; exhibitor: R.F. Orchids, Inc.



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a bonus.

Care and Culture

TEMPERATURE They are warm growers with daytime conditions of 65 F (18 C) or higher. They will continue in active growth anytime of the year if given warm temperatures and bright light. Night temperatures, generally, should not be lower than 55 F (12 C) for extended periods.

LIGHT Maximum sunlight should be given with only enough shade to keep the temperature within the appropriate range and protect the foliage during the middle part of the day. For our greenhouses in south Florida, we use 46 percent shade cloth covered with ¼-inch (6-mm) clear plastic on the top and sides of greenhouses, producing about 50 percent shade. Most are not suitable for growing on a windowsill or under lights because of their light and watering requirements.

AIR MOVEMENT These orchids are epiphytes and need strong air circulation.

WATER Vandas in slat baskets should be watered daily, preferably early in the morning. The root mass should be dripping wet. On hot, sunny days around 80 percent humidity is appropriate. Water more sparingly in winter, during a long cloudy spell or after repotting. In any season, avoid watering plants late in the afternoon.

FERTILIZING Vandas are heavy feeders. Once a week during the growing season, feed a solution of a complete, balanced water-soluble fertilizer such as 20-20-20. High-nitrogen fertilizers will inhibit flowering and are not recommended for these orchids. All plants should be flushed thoroughly with plain water once a week to remove built-up salts.

During the winter (non-growing season), feed every two weeks. In addition, at every third feeding year round we substitute a “bloom booster” (10-30-20). And once a month we add ¼ teaspoon (1.25 ml) SUPERthrive®, a concentrated vitamin and hormone solution for plants, to each gallon (3.8 l) of fertilizer solution.

POTTING Vandas will grow well in any porous medium if properly aerated. The roots must not be smothered by tight potting or soggy medium. We prefer baskets with little or no additional growing medium, but pots can be used if aeration and drainage are good. Plants should be suspended so that the aerial roots are free.

PESTS Flower thrips are the most common insect pest of vandas. Any insecticide rated for orchids will control



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them with regular use and you should rotate insecticides. Leaf-spot fungus *Phyllosticta* is problematic; a thiophanate-methyl systemic fungicide will control it.

— Robert Fuchs is a third-generation orchid grower and president of R.F. Orchids, Inc., in Homestead, Florida. The nursery was founded in 1970. A recognized expert on vandaceous orchids, Bob presents lectures to audiences around the world, and his articles have been published in many prestigious publications. Bob is an accredited American Orchid Society judge, past president of the South Florida Orchid Society, life member of the American Orchid Society, and past President of the 19th World Orchid Conference in 2008. He was inducted into the Florida Agriculture Hall of Fame in 2013, the first orchid grower to be so honored. He is currently president of the American Orchid Society (email: info@rforchids.com; www.rforchids.com).

- [24] V. Will Riley AQ/AOS; exhibitor: R.F. Orchids, Inc. Insets, left to right: ‘Crownfox’ FCC/AOS; ‘Bonnie’ FCC/AOS, and ‘Crownfox Big Boy’ FCC/AOS.
- [25] V. Barbara Walker AQ/AOS; exhibitor: R.F. Orchids, Inc. Inset close-ups, clockwise from upper right: ‘Crownfox Peach Parfait’ AM/AOS, ‘Crownfox Leopard’ AM/AOS and ‘Crownfox Spotted Cat’ AM/AOS.
- [26] V. Nanette Zapata ‘Crownfox Carmine’ FCC/AOS; exhibitor: R.F. Orchids, Inc.
- [27] Aerdv. Christine Patton ‘Crownfox’ AM/AOS; exhibitor: R.F. Orchids, Inc.
- [28] V. Robert’s Delight ‘Big Black’ AM/AOS; exhibitor: New Vision Orchids.

The Other Vandas

New Directions in Vanda Breeding

BY MARTIN MOTES



THE VAST MAJORITY of standard vandas trace their ancestry to just five species, *Vanda sanderiana*, *Vanda dearei*, *Vanda coerulea*, *Vanda luzonica* and *Vanda tricolor*. Of these two, *V. sanderiana* and *V. dearei* are among the largest plants and most cold sensitive in the genus. *Vanda sanderiana*, the predominant species in most hybrids, has deeply v-shaped leaves, which require exceptionally bright light. Among the 80-plus species of *Vanda* are numerous species that can overcome the deficiencies in standard *Vanda* breeding that make the plants unnecessarily difficult to grow both in subtropical gardens and in temperate-zone greenhouses. Many *Vanda* species also display color and markings that are exceedingly attractive. As three of the species parenting standard vandas lack fragrance, standard vandas lack this desirable quality as well. In contrast, most other *Vanda* species are either fragrant or highly fragrant. The possibilities for breeding colorful, compact, fragrant *Vanda* hybrids that are easily grown and free flowering everywhere is immense.

Vanda tessellata has been used periodically in *Vanda* bloodlines, but many of its virtues have yet to be fully exploited in *Vanda* breeding. *Vanda tessellata* is a relatively small plant of great vegetative vigor. Its natural range is extensive and it occurs in many color forms. Most forms are tessellated gray or brown with a bright blue or occasionally pink lip. Forms of *V. tessellata* originating in Sri Lanka and southern India are larger and concolor gray, purple and red-brown. An alba form also exists. These forms are superior to the typical species in both size and color, although some flower less frequently than the northern India type. These *V. tessellata* bred to *V. coerulea* in Florida with the superior, nearly black *V. tessellata* clone 'Mary Motes' FCC/AOS, produced a new hybrid strain of *Vanda* Violeta with bright, cobalt-blue flowers on long stems and of heavy substance, which has garnered several AOS awards. Strongly two-toned flowers with a vividly contrasting lip are characteristic of the hybrids of *V. tessellata*.

The most successful of these is the deliciously fragrant *Papilionanda* Mimi Palmer (Tan Chay Yan × *V. tessellata*). Clones of this grex have received award recognition both in Thailand and from the AOS, for good reason — the steely blue-gray, mottled petals and sepals are a perfect background for the startling violet-blue lip. The remake of the backcross of *Pda.* Mimi Palmer to *V. tessellata*,



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Papilionanda Arjuna, has produced award-winning progeny that intensify the positive qualities of *V. tessellata* displayed in *Pda.* Mimi Palmer and, because the remake was made with *V. tessellata* 'Mary Motes', FCC/AOS this strain of the hybrid has proved valuable in producing exceptionally dark flowers. The Thai hybrid *Vanda* Blue Grig (*Rothschildiana* × *tessellata*) produced dark blues that proved popular. Crossed to *V. tessellata*,

- [1] *Papilionanda* Paksorn Fragrance 'Garrett's Mahogany Valentine' AM/AOS; exhibitor: Sharon and David Garrett; photographer: Wes Newton
- [2] *V. tessellata* 'Bartholomew Motes' AM/AOS; exhibitor: Motes Orchids. This clone is pictured because existing photographs of 'Mary Motes' FCC/AOS have degraded and are no longer true to color.
- [3] *V. Violeta* 'Alice Motes' AM/AOS; exhibitor: Naoki Kawamura.
- [4] *Pda.* Mimi Palmer 'Garrett's Dark Knight' AM/AOS; exhibitor: Sharon and David Garrett.
- [5] *Pda.* Arjuna 'Electric Blue' AM/AOS; exhibitor: Sharon and David Garrett.
- [6] *Pda.* Karina Motes 'Midnight Magic' JC/AOS; exhibitor: Motes Orchids

the result *Vanda* Mary Motes was the trophy winner as best Vanda in the 17th World Orchid Conference. *Vanda* Mary Motes, when crossed to *V. Violeta*, produced *Vanda* Karina Motes, the

darkest of which, such as 'Midnight Magic' JC/AOS, are virtually black. *Vanda* Mary Motes when backcrossed to *V. tessellata* produce many full-formed nearly black flowers best exemplified by *Vanda* Motes Midnight 'Blind Judgement' AM/AOS. The strain of *Vanda* Memoria Louis Hatos (John de Biase × *tessellata*), made using the superlative *V. tessellata* 'Mary Motes', FCC/AOS has received a coveted AQ for Motes Orchids. The numerous awarded clones of this superior strain range in color from deep raspberry-red to purple so dark it approaches black. All display excellent form from the *Ascocentrum*-section parent. Crossed to *Vanda* Karnda (1981), a *V. tessellata* hybrid, the FCC variety produced the dark full-formed *Vanda* Blue Tahourdin, which garnered both AOS and RHS awards. When *V. Blue Tahourdin* was crossed back to the superlative *V. tessellata*, the profusely successful *Vanda* Motes Purple Rain resulted in a range of dark full-formed flowers with contrasting deep-indigo lips.

Pure-white forms of *V. tessellata* also exist and are a useful avenue to producing white vandas. An earlier Thai hybrid, *Vanda* Thanantess (Thananchai × *tessellata*), when crossed to the alba form of *Rhynchostylis coelestis* yielded the pure-white *Vandachostylis* Monica Brick, which, when crossed to *V. tessellata* var. *alba*, yielded *Vandachostylis* Motes Alabaster, whose relatively full-formed, pure-white to pale-chartreuse flowers have received awards from both the AOS and RHS. A white-with-a-red-lip form of *V. tessellata* emerged a few years ago and received an AM/AOS. The first progeny of *V. tessellata* 'Karina Motes' are blooming for the first time and show promise of yielding attractive, white-with-colored-lip vandas.

Both *Pda.* Mimi Palmer and *Pda.* Arjuna have produced solid success in fragrant, free-flowering, boldly marked flowers. Neither hybrid shows any evidence of the supposed but dubious *Pda.* Tan Chay Yan parentage, but both produce spotted progeny with the color pattern of *Vanda insignis*. Breeding the Thai variety *Pda.* Mimi Palmer to *V. tricolor* var. *suavis* has produced fragrant, pale-bluish and pinkish, heavily spotted flowers of medium size with bright-blue or pink lips. *Papilionanda* Motes Toledo Blue (*V. tricolor* × Mimi Palmer) has received four AOS awards and is the parent of *Papilionanda* Alice Motes (Motes Toledo Blue × Arjuna), which has garnered awards from both AOS and from the 17th WOC. *Papilionanda* Arjuna crossed



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to *Vanda* Gordon Dillon 'Lea' AM/AOS has produced numerous, large-spotted flowers in both deep red and dark purple that have garnered numerous awards for *Papilionanda* Erika Cizek Dann.

Vanda insignis itself has been underutilized in vanda breeding. The distinctly marked flowers with exceptional large, showy lips are borne on compact plants that flower several times per year. The ability of *V. insignis* to produce vivid spots is evident in its hybrid with

- [7] *V. Motes* Midnight 'Blind Judgement' AM/AOS; exhibitor: Motes Orchids.
- [8] *V. Memoria* Louis Hatos 'Mary Motes' HCC/AOS; exhibitor: Motes Orchids.
- [9] *V. Blue* Tahourdin 'Bronze Grape' AM/AOS; exhibitor: Judith Neufeld.
- [10] *V. Motes* Purple Rain 'Emilia Luna Motes' AM/AOS; exhibitor: Motes Orchids.
- [11] *Van.* Motes Alabaster 'Karina Motes' AM/AOS; exhibitor: Motes Orchids.

V. tricolor var. *suavis*, *Vanda* Ambrosian Discovery, whose striking white sepals and petals boldly marked by vivid cerise is offset by a large cerise lip. The contrast of the large, deep-violet lip of *Vanda* Paksorn Fragrance 'Garrett's Mahogany Valentine' AM/AOS with its chestnut sepals and petals is a charming example of the ability of *V. insignis* to bring the lip forward as the most prominent feature of the flower. This factor is recognized by judges in Florida who rightly judge many vanda hybrids on the General Scale, which gives full value to the lip, which is frequently the most prominent and colorful part of the flower. *Vanda* Peter Swenson 'Cyndee's Peter' AM/AOS (*motesiana* × *insignis*) retains the distinctive shape of the lip of *V. motesiana* but enlarged by the genes from *V. insignis*. This distinctive lip and the impressive pattern of color in the sepals and petals improves on the best characteristics of both parents.

Vanda merrillii, with the brightest, most distinctive red color, richer and deeper than even the red of *Vanda curvifolia* and *Vanda rubra* has, until recently, been absent from *Vanda* breeding. Despite the species also possessing long stems, high flower count and an exceptionally glossy texture, which it passes on for several generations in its progeny, its narrow, clawed petals were anathema to the early Hawaiian *Vanda* breeders who were fixated on form. The notable exception being *Vanda* Red Gem (*merrillii* × *curvifolia*), whose success inspired the creation of *Vanda* Ruby Tuesday using the backcross of *Vanda* Peggy Foo to *V. curvifolia* named *V. Truman Motes* and crossed to *V. merrillii*. The result, *V. Ruby Tuesday*, was a fuller-formed version of *V. Red Gem*, which garnered two AMs. *Vanda* Motes Hot Chestnut (*Bigness* × *merrillii*) was highly successful producing large flowers of fuller form so like *V. merrillii* that one clone of the grex was mistakenly awarded as the species itself. This success was not accidental, the parent *Vanda* Bigness had a *V. merrillii* hybrid, *Vanda* Iolani, in its ancestry, which, while distant, was extremely influential as CD Orchids, its creator, had unconsciously been selecting for *V. merrillii* color in their search for exceptionally dark flowers. The ability to recognize the presence of ancestral species in the genotype by close observation of the phenotype is an invaluable skill for the hybridist.

A more recent surge in successful hybrids from *V. merrillii* was fueled by the availability of *V. merrillii* var. *rotorii*,



GREG ALLIKAS



TOM KULIGOWSKI



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the concolor-red form of the species. Crossed to the complex *Vanda* Foxy Lady, *V. merrillii* var. *rotorii*, as expected, yielded in *Vanda* Motes Hot Mama deeply red flowers whose depth of color were enhanced by the influence of the yellow vandas in the background of the complex hybrid. Two have received AOS award recognition. Crosses of *V. merrillii* to the superlative strain of *V. tessellata* and its hybrids yielded exceptional, dark-burgundy flowers. Crossed to *V. Mary Motes* 'Dijon' GM/17th WOC resulted in *Vanda* Motes Hot Chocolate 'Karina Motes' AM/AOS, whose nearly concolor reddish-brown, fragrant flowers were carried on long, arching inflorescences. The cross of *V. merrillii* var. *rotorii* with *V. tessellata* 'Mary Motes' FCC/AOS, *Vanda* Greg Scott, yielded even darker burgundy flowers. Six of this grex garnered AOS award recognition for their depth of color and exceptional substance and texture.

The long spikes of numerous flowers and striking pattern of color make *Vanda*



MAURICE GARVEY

[12] *V. tessellata* 'Karina Motes' AM/AOS; exhibitor: Motes Orchids.

[13] *Pda.* Motes Toledo Blue 'Yen HKN Nguyen' HCC/AOS; exhibitor: Ho-kin Ng.

[14] *Pda.* Alice Motes 'Daddy's Girl' AM/AOS; exhibitor: Motes Orchids.

[15] *Pda.* Erika Cizek Dann 'In Arcadia Ego' HCC/AOS; exhibitor: Motes Orchids.

[16] *V.* Ambrosian Discovery 'Fair Orchids' AM/AOS; exhibitor: Kim Feddersen.

lamellata var. *boxallii* attractive as a parent. The development of the richly colored AQ strain of *V. lamellata* var. *boxallii* has provided the material for producing superior hybrids with bold color, high flower count and perfectly symmetrical arrangement. *Vanda lamellata* is in the same section of *Vanda*, *Lamellaria*, with *V. sanderiana* and comes from proximate locales geographically. Not surprisingly, the desirable masked pattern of color in the lateral sepals, a desirable feature of *V. sanderiana* and its hybrids, emerges with frequency in hybrids of *V. lamellata* as well. The long, narrow petals of *V. lamellata* are better paired in hybrids with section *Ascocentrum* parents. *Vanda* Motes Ginger Hot (*lamellata* var. *boxallii* × Motes Goldenrod) ‘Redland Spice’ AM/AOS presents its clearly marked, deep-golden-orange flowers on erect, perfectly formed inflorescences. The same is true of *Vanda* Motes Burning Sands ‘Mary Motes’ AM/AOS (*lamellata* var. *boxallii* × Motes Goldpiece) whose full, masked flowers are as symmetrically arranged as can be imagined. Three other clones of this remarkable grex also received award recognition. The ability of *V. lamellata* to rectify short, crowded stems, a common flaw in standard lines of breeding, is well illustrated in *Vanda* Fulford’s Gold ‘Mary Motes’ (Udomchai × *lamellata* var. *boxallii*), where the well-spaced, rich-colored flowers are carried well above the foliage improving on an already more than satisfactory hybrid. The same excellent qualities of flower spike length and spacing are on display in the awarded clones of *Vanda* Marty Brick (*lamellata* var. *boxallii* × Motes Mandarin), *Vanda* Motes First Light (*lamellata* var. *boxallii* × Rasri Gold) and *Vanda* Shades of Amber (*lamellata* var. *boxallii* × Motes Sahara).

Vanda lamellata var. *remediosa* in most forms is a rather dull pale yellow, but in a few select clones is nearly pure white with distinct masking in its lateral sepals and a contrasting pink lip. *Vanda lamellata* var. *remediosa* ‘Mary Motes’ HCC/AOS has been recognized as one of these superior types. It is proving to be a successful parent. Crossed to the pale *Vanda* Thai Snow (Madame Kenny × Kultana Gold), it produced *Vanda* Miami Snow Drop, which was the parent of *Vanda* Motes Lemon Tart ‘Karina Motes’ HCC/AOS (*cristata* × Miami Snow Drop), a clear-chartreuse flower with a vividly contrasting magenta and a lip demonstrating the possibility of creating white-with-red-lipped vandas.

The cool-growing *Vanda cristata* is always a desirable parent. The chartreuse



17 CARMEN JOHNSTON



18 JAMES MCCULLOCH



19 GREG ALLIKAS



20 RHONDA PETERS



21 VIES NEWTON



22 BRIAN MONK

sepals and petals are a bold contrast to the vivid red lip. The most successful *V. cristata* hybrid to date is the remake of *Vanda* Paki (*cristata* × *tricolor*) using *V. tricolor* var. *suavis*, which, in addition to its clarity of color, contribute genes for longer inflorescences bearing more-numerous flowers. One of the many clones awarded to the grex, *V. Paki* ‘Esther Motes’, has received recognition from both the AOS and the RHS. Crossed to *V. Rasri Gold*, *V. Paki* yielded *Vanda* Motes Goldflake, with diminished spotting but larger flowers with vivid red lips, two of

- [17] *V. Peter Swenson* ‘Cyndee’s Peter’ AM/AOS; exhibitor: Motes Orchids.
- [18] *V. Red Gem* ‘OK Too’ HCC/AOS; exhibitor: Stephen Benjamin.
- [19] *V. Ruby Tuesday* ‘Redlands Festival’ AM/AOS; exhibitor: Motes Orchids.
- [20] *V. Motes Hot Chestnut* ‘Sunprairie’ HCC/AOS; exhibitor: Bill Nelson.
- [21] *V. Motes Hot Mama* ‘MV Chocolatier’ AM/AOS; exhibitor: Stuart Henderson.
- [22] *V. Motes Hot Chocolate* ‘Karina Motes’ AM/AOS; exhibitor: Motes Orchids.

WES NEWTON



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WES NEWTON



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AWARD ARCHIVES



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CLAUDE W. HAMILTON



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LARRY JOHNSON



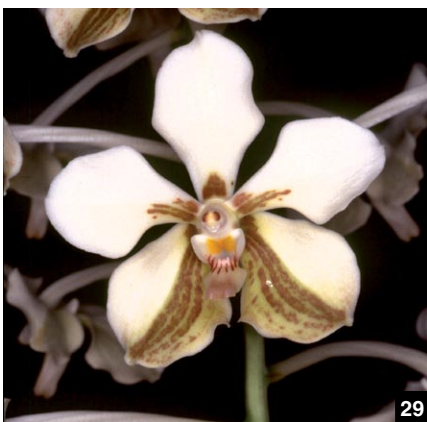
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GREG ALLIKAS



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JACQUELYN FOX



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AWARD ARCHIVES



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AWARD ARCHIVES



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- [23] *V. Greg Scott* 'Wine Festival' AM/AOS; exhibitor: Naoki Kawamura.
- [24] *V. Greg Scott* 'Dark Lady' AM/AOS; exhibitor: Naoki Kawamura.
- [25] *V. Motes Ginger Hot* 'Redland Spice' AM/AOS; exhibitor: Motes Orchids.
- [26] *V. Motes Burning Sands* 'Mary Motes' AM/AOS; exhibitor: Patricia and Michael DuQuesnay.
- [27] *V. Fulford's Gold* 'Mary Motes' AM/AOS; exhibitor: Motes Orchids.
- [28] *V. Marty Brick* 'Mary Motes' HCC/AOS; exhibitor: Motes Orchids.
- [29] *V. Motes First Light* 'Dawn' AM/AOS; exhibitor: Motes Orchids.
- [30] *V. Miami Snowdrop* 'Katzi's Anastasia' AM/AOS; exhibitor: Katzi's Exotic Blossoms, Inc.
- [31] *V. Shades of Amber* 'Farmlife Dawn'; exhibitor: Motes Orchids.

which received AOS awards. Crossed to the spotted *Vanda* Guo Chia Long, the distinct spotting and suffusion of color from *V. Paki's V. tricolor* var. *suavis* parent came through. Two of this grex, *Vanda* Paki Long, received award recognition. *Vanda* Paki, when crossed to *Vanda* Bill Burke (*denisoniana* × *cristata*) to produce *Vanda* Hollis Presnell, resulted in larger, clearly spotted flowers that retained most of the charming color pattern of *V. Paki* itself.

Another successful hybrid with affinity to *V. Paki* is *Papilionanda* Naoki Kawamura (*Arjuna* × *cristata*). The more complex parentage of *Pvda. Arjuna* resulted in a much wider range of color from pale orange to violet to lime green, with some manifesting bold spots from their *V. insignis* ancestor, but all with dark-magenta to burgundy lips. To date, seven have received awards including two FCC's.

Another new hybrid from *V. cristata*, *Vanda* Motes Ruby Pixie (*cristata* × *testacea*) illustrates the immense possibilities latent in introducing seldom-used species to *Vanda* bloodlines. *Vanda* Motes Ruby Pixie produces long spikes of golden-yellow flowers with intensely red lips. The depth of color, high flower count and long inflorescences are all gifts from *Vanda testacea*, a species relatively obscure in *Vanda* breeding. The grex is producing offspring in as little as 27 months from seed, creating miniature hybrids adapted to growing in small greenhouses, on windowsills and under lights.

The possibilities of breeding with the other 80-plus species of *Vanda* are immense. *Vanda* hybridization in many ways is where *Phalaenopsis* hybridization was in the early 1960s before Louise Vaughn introduced new species to *Phalaenopsis* bloodlines and initiated the breeding, which has given us a wealth of color in *Phalaenopsis* hybrids. Some of these new *Vanda* hybrids are emerging in Thailand and elsewhere, and several hundred new hybrids will be blooming out in the next few years in Redland. A colorful wave of compact, free-flowering, easily grown hybrids will soon be available everywhere.

—Martin Motes (email: martinmotes@gmail.com).



AWARD ARCHIVES



BRIAN MONK



AWARD ARCHIVES



AWARD ARCHIVES



BRIAN MONK



WES NEWTON



KAY CLARK

- [32] *V. Paki* 'Alice Motes' HCC/AOS; exhibitor: Motes Orchids.
- [33] *V. Motes* Lemon Tart 'Karina Motes' HCC/AOS.
- [34] *V. Motes* Goldflake 'Azra' AM/AOS; exhibitor: Motes Orchids.
- [35] *V. Paki* Long 'Minerva' HCC/AOS; exhibitor: Orlando Diaz Quirindongo.
- [36] *V. Motes* Ruby Pixie 'MV Frank's Gift' AM/AOS; exhibitor: Stuart Henderson.
- [37] *V. Hollis* Presnell 'Krull-Smith' AM/AOS; exhibitor: Krull-Smith.
- [36] *V. Naoki* Kawamura 'Whisper He's The Best' FCC/AOS; exhibitor: Wes and Laura Newton

Influenced by the Wind (Orchid)

TEXT AND PHOTOGRAPHS BY JASON FISCHER

CALL ME A rebel, but most fans and I of the taxonomically correct *Vanda falcata* still refer to it as *Neofinetia falcata*. Alternately, we could go by its original name, which came about in the 1400s in China: the wind orchid. However you may like to refer to it, one thing is for certain: it is incredibly charming! I find that many collectors of *V. falcata* are also interested in its hybrids. *Vanda falcata* is a fun parent to breed with as it tends to be dominant in offspring characteristics. It tends to pass on its flower shape, its compact size, and often its fragrance to the offspring. Most *V. falcata* are white, with the exception of some varieties of the species coming in pink, magenta, green and light-yellow tones. All color varieties of *V. falcata* have a white labellum, and often white is mixed in on the petals and spurs. Once other *Vanda* species or hybrids are crossed with *V. falcata*, the hybridizing fun begins!

Primary Hybrids As an orchid breeder, in general, primary hybrids are always the “go to” choice. A primary hybrid is when both parents are species. Primary hybrids tend to be very consistent in quality, flower shape and color. They also give high yield in the offspring, making it commercially friendly and allowing a good choice of plants to select from when choosing to breed in the next generation. This is why most crosses available in the market are typically primary. In addition, many of the great primary crosses were made many years ago and continue to be remade today because of consistent quality. When you have something good, just stick with it!

***Vandachostylis* Lou Sneary – registered 1970** (*V. falcata* × *Rhynchostylis coelestis*)

Perhaps the most well-known hybrid of them all is *Vandachostylis* Lou Sneary. This hybrid was originally registered in 1970 by a Hawaiian nurseryman, Hajime Ono, whose name will most likely make you think of *Miltoniopsis*. This cross is quite fun due to its sweet fragrance (both



parents are fragrant) and range of color from pink to purple and white, which are all the colors of the parents mixed together. Interestingly, for a primary the size of this hybrid, it has been from compact to just as large (and sometimes larger) than the *Rhy. coelestis*. But there is a reason for that. Up until now, almost

[1] *V. falcata* ‘Zuiun’ — A true yellow variety. Note the pale color and white lip. Inset photograph is an unknown *falcata* hybrid sold in Japan as ‘Kibana × Yubae’



Offered in Japan as *Neofinetia falcata* 'Raikoumaru'.
The exact parentage is unknown and most suspect
this is a back-cross hybrid. The roots are much
thicker than standard *falcata*, making it a good
candidate for a hybrid.

all the *V. falcata* hybrids have been made with standard white or Amami Island white forms of *V. falcata*. If the hybrid was made with an Amami Island *V. falcata*, the foliage will be long and large. What will be fun moving forward for me is remaking the crosses with other varieties of *V. falcata* to influence flower and foliage shapes and colors. Even some variegated *V. falcata* can pass on their traits, making an endless possibility for future crosses. It is always a great idea to go back and remake an old cross with new parents. My latest remake of Lou Sneary was with a *V. falcata* 'Shutenou', which has some magenta color tones. The offspring have not shown any magenta so far.

Vanda Blaupunkt – registered 1986
(*coerulescens* × *falcata*)

What a fantastic cross this has been! Unfortunately, this cross is seldom seen these days (I need to remake it). All the crosses originally were made with the lavender form of *Vanda coerulescens* (a pink variety also exists), thus making all offspring that have been seen to be purple. In this case, the fragrance of the *V. coerulescens* is dominant, making the flowers smell like grape candy! Interestingly, the fragrance on the hybrid is much stronger than on the *V. coerulescens* species itself. Perhaps *V. falcata* contributed to the stronger fragrance.

Vanda Cherry Blossom – registered 1961
(*falcata* × *ampullacea*)

Vanda Cherry Blossom is another classic cross that remains popular today and is constantly being reproduced. And again, this plant is most commonly thought of as *Ascocinetia* Cherry Blossom, as *Vanda ampullacea* used to be called *Ascocentrum ampullacea*. The different varieties of *V. ampullacea* have been used to create various color forms of this cross. Interestingly, most *Vanda* Cherry Blossom plants are not fragrant. In all my years, I have only run across one that was fragrant (unless it was mislabeled!). I would be curious to know if others have experienced the same. With the available various color forms of both parents of this cross, there are potentially over a dozen possible color forms waiting to be made!

Aeridovanda Suzuka Pearl – registered 2007
(*falcata* × *Aerides Houlletiana*)

This is a great example of the strong genetic dominance of *V. falcata*. A fairly tall *Aerides* is now reduced to a compact hybrid with the colors and spots of *Aerides* on a *falcata*-like flower that is fragrant. The color range has been from white to yellow with pink spotting. Lovely plants!



- [2] *Vandachostylis* Lou Sneary 'Bluebird'
- [3] *Vandachostylis* Lou Sneary grown from seed.
- [4] *Vanda* Blaupunkt
- [5] *Vanda* Cherry Blossom made with an orange form of *Vanda ampullacea*.
- [6] *Aeridovanda* Suzuka Pearl
- [7] *Vandachostylis* Pinky 'Red'. Inset photograph of a brightly spotted form.

Vandachostylis Pinky – registered 1990
(*falcata* × *Rhynchostylis gigantea*)

This is such a fun cross, which truly represents a 50/50 genetic appearance of both parents, with the exception of some plants staying compact and some reaching a size in between the parents. Again, with various flower colors available with each parent, there is great opportunity in remaking this hybrid. In this case, the *Rhy. gigantea* parent has dominance in fragrance. Often, I and other hobbyists who love *V. falcata* will mount these hybrids in the traditional moss-mound style used for *V. falcata*.

Papilionanda Pink Fairy – registered 2014
(*falcata* × *Papilionanthe teres*)

Another 50/50 genetic-trait hybrid keeps the long terete foliage of the *Papilionanthe*, but brings the size down by about 50 percent. In addition, the flowers show characteristics from both parents. The foliage and flower size, which is large for *V. falcata* breeding, are what set this hybrid apart from most *V. falcata* crosses. This looks like a fun plant to mount on a post so it can climb.

Vandachostylis Charm – registered 1987
(*falcata* × *Vandachostylis* Tham Yuen Hae)

More commonly known as *Darwinara* Charm, this was and still is one of the best hybrids of *V. falcata* due to its lovely falcata-like flower with a range of available colors. Perhaps the most famous, which is still cloned today, of all time is 'Blue Star'. It has also been used in numerous *Vanda* hybrids. It smells lovely as well!

Renantanda Sunrise – registered 1967
(*falcata* × *Renanthera imschootiana*)

This cross is not often seen, but so far most of the *Renanthera* crosses with *V. falcata* have turned out with flowers and foliage that resemble a smaller *Renanthera*. In addition, the flowers will open up with orange tones and fade to pink as time goes by. So far, I have not noticed any to have fragrance.

Vanda falcata backcrosses Backcrossing is taking one of the two parents of a hybrid and crossing it back onto the original hybrid. The result is a heavily influenced flower that will resemble the parent used for backcrossing. Since *V. falcata* is so dominant in breeding, the backcrosses often end up looking close to *V. falcata*, but with different colors in the flowers. Even the foliage is nearly identical to *V. falcata* foliage, but often carries over the pigment often seen in various vandas.

In addition, there are many dark-yellow and purple varieties coming out of



Japan and Korea marketed as *Neofinetia* hybrids with varietal names. Many of these do not show which parents were used, so they end up being labeled as *Neofinetia falcata* 'Kibana' (translated "yellow flower"), etc. The clonal name represents the color of the flower, but does not indicate history of the actual hybrid.

Vanda Kaori – Registered 1990 (*falcata* × Cherry Blossom)

This is a fantastic hybrid; most recent remakes have been made with the *V. falcata* 'Benisuzume', which is already pink. The cross still has a wide range of color with some still resulting in almost pure white flowers despite both parents having pink color, thus showing the dominance in the *V. falcata* white color gene.

Vanda falcata × (Vandachostylis Lou Sneary × Vanda Mungkud)

This is an unregistered hybrid, which is not a direct backcross, but it is *V. falcata* crossed with a hybrid containing *V. falcata* in the background. Even so, the result is similar to a backcross in the dominant shape of the flower. This cross has a lovely, rich-purple color along with sweet fragrance.

Vandaenopsis Summer Stars – registered 1979 (*falcata* × *Phalaenopsis japonica*)

This is an intergeneric hybrid between species that were originally called *Neofinetia falcata* and *Sedirea japonica*. What an interesting cross! Some of the offspring have pink spots and some do not. The fragrance is perhaps the most interesting part about this hybrid. I have never experienced a *V. falcata* hybrid that smells like both parents. In this case, you can distinguish the fragrance as a 50/50 mix of both *V. falcata* and *Phal. japonica*, and it is quite nice! These are slow and steady growers, and a great plant to add to your miniature collection.

The future of Vanda falcata hybrids

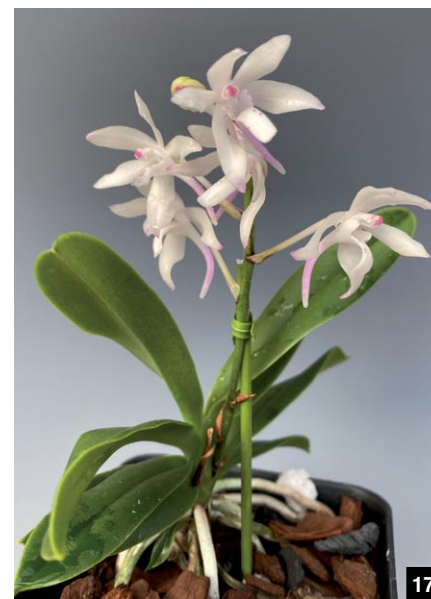
I have seen two trends continually growing in the past 20 years. One is that the species of *V. falcata* has become popular for its unique characteristics, history and collectability. The second is the popularity of compact orchids, making *Neofinetia falcata* the perfect parent to use in the future of vanda breeding. Between remaking old classics with new parents, backcrossing and creating new hybrids, there are endless possibilities using *V. falcata* to hybridize with. And personally, I see myself creating more of these hybrids for the future as I see the demand continually grow, and because I like the plants!



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— Jason Fischer helps manage Orchids Limited in Plymouth, Minnesota USA with his father Jerry Fischer. Jason has had a life-long education in orchids mainly from the opportunity to be raised in a family orchid business. Having learned Japanese, Jason lived in Kyoto, Japan from 2001 to 2003, and upon return decided to import Japanese orchid species and add a new niche to the business. His main

- [8] *Papilionanda* Pink Fairy
- [9] *Vandachostylis* Charm 'Pink Star'
- [10] *Vandachostylis* Charm 'Blue Star'
- [11] *Renantanda* Sunrise
- [12] Rainbow Stars 'Purple Rain'
- [13] *Vanda* Kaori
- [14] A fragrant *V. Kaori*; most are not fragrant.
- [15] *Vanda* Kaori group shot.
- [16] The unregistered hybrid (*V. falcata* × [*Van. Lou Sneary* × *V. Mungkud*]).
- [17] *Vandaenopsis* Summer Stars
- [18] *V. falcata* 'Seikai' may play an interesting role in the next generation of compact vanda hybrids due to its unique flower and foliage shape, which passes on to the 2nd generation of crosses due to recessive genetics.

interests include hybridizing *Vanda falcata* varieties and phragmipediums. He also has interests in overall culture and finding ways to perfect growing of all genera of orchids (email: jason@orchidweb.com).



Smaller Vandas

Trends in Ascocentrum-Type Vanda Breeding

BY ROBERT FUCHS

FUCHS

VANDAS FORMERLY KNOWN as ascocentrums are closely related to the strap-leaf vandas with a similar growth habit and inflorescence structure on a much smaller scale. Orchidists estimate there are about 15 species of former ascocentrums growing in tropical Asia, but only three are significant in hybridizing: *Vanda* (*Ascocentrum*) *miniata*, *Vanda* (*Ascocentrum*) *curvifolia* and *Vanda* (*Ascocentrum*) *ampullacea*. (There is some taxonomic uncertainty about the correct botanical name for the plants commonly cultivated as *V. miniata*, but as this is the name accepted by the Royal Horticultural Society for hybrid registrations and the name commonly used for cultivated plants of this species, it will be used in the following discussion. Most are likely *Vanda garayii*. See the references for more information on taxonomic issues in the genus *Vanda* for species formerly known as *Ascocentrum*.)

Such vandas are frequently crossed with other larger vandas to produce one of the most common and popular groups of vandaceous orchids: the vandas formerly known as ascocendas. Compared with hybrids in other groups of related orchids, these vandas are relatively recent additions to our collections.

The first hybrids registered with such species parent were made by Dr. C.P. Sideris in Hawaii. *Vanda* Portia Doolittle, a cross of *V. curvifolia* and *Vanda lamellata*, was registered in 1949. In 1950, Dr. Sideris registered *Vanda* Meda Arnold, a cross of *V. curvifolia* and *Vanda Rothschildiana*, and in 1951 he registered *Vanda* Chryse, a cross of *V. miniata* and *V. lamellata*. No further registrations with ascocentrum-type *Vanda* species appear until 1960, when the Rev. M. Yamada, also in Hawaii, registered *Vanda* (*Ascofinetia*) *Twinkle*, a cross of *V. miniata* and *Vanda* (*Neofinetia*) *falcata*.

The number of hybrids with ascocentrum-type vandas in the background exploded in the next decade. From 1961 to 1970, breeders registered more than 60 hybrids with a former "ascocentrum" *Vanda* species as one parent, and nearly 200 hybrids with such species in the background. Breeders continued to use ascocentrums and their hybrids in the following years. Today, there are thousands of such hybrids registered. This huge increase in the number of vandas and other hybrid genera with ascocenda parentage is the result of the popularity of these orchids.

These hybrids bloom in a wide range of colors, tones and markings. Colors



LEWIS ELLSWORTH



AWARD ARCHIVES



GREG ALLIKAS



GREG ALLIKAS



MAURICE MARIETTI

- [1] *V. Crownfox Golden Dawn* 'Pamella Dupuis' AM/AOS; exhibitor: Antonio Romani; photographer: Greg Allikas.
- [2] *V. miniata* 'Sharon Garrett' AM/AOS; exhibitor: Jack and Norma Majewski.
- [3] *V. curvifolia* 'Redlands' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [4] *V. ampullacea* 'Crownfox Pink Glow' CCE/AOS; exhibitor: R.F. Orchids, Inc.
- [5] *V. Porcia Doolittle* 'Orchid Acres' AM/AOS; exhibitor: Orchid Acres, Inc.
- [6] *V. Meda Arnold* 'Penn Valley' AM/AOS; exhibitor: William W. Wilson, PhD.

range from blue and purple to red, orange, and yellow; tones may be vibrant or delicate pastel, and the flowers may be solid, bicolored, tessellated, spotted or striped. Such hybrids are also popular because they are generally free flowering, most producing several inflorescences per year, and because of their relatively

compact size.

Vanda (*Ascocentrum*) *miniata*

Our discussion of "ascocentrum" hybrids begins with some progeny of *V. miniata*. *Vanda miniata* is a delightful

VANDA MINIATA PROGENY



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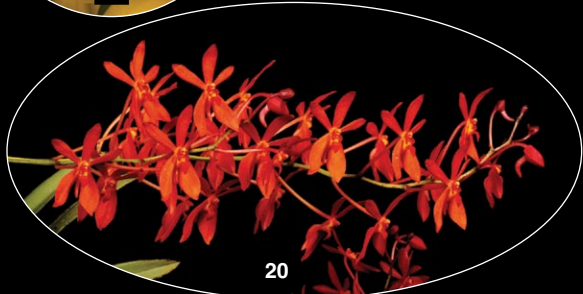
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- [7] *V. Chaisiri* 'Norma's Delight' HCC/AOS; exhibitor: Jack and Norma Majewski; photographer: Lewis Ellsworth.
- [8] *V. Kitival* 'Robert' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS award archives.
- [9] *V. Pralor* 'Naranja' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS award archives.
- [10] *V. South East Gold* 'Orange Parfait' AM/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS award archives.
- [11] *V. Udomchai* 'Florida Sunshine' AM/AOS; exhibitor: Mike Coronado; photograph from the AOS award archives.
- [12] *V. Su-Fun Beauty* 'Orange Belle' AM/AOS; exhibitor: Bette Dittmore; photograph from the AOS award archives.
- [13] *V. Fuchs Golden Nugget* 'Robert' AM/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS award archives.
- [14] *V. Fuchs Butter Baby* 'New Dawn' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas.
- [15] *V. Viroonchan Gold* 'Robert' AM/AOS; exhibitor: James P. Cave; photograph from the AOS award archives.
- [16] *V. Fuchs Gold* 'Tony's Platinum' AM/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Brian Monk.
- [17] *V. Crownfox Sundancer* 'Sarah's Dance' AM/AOS; exhibitor: Eric Shue; photographer: Greg Allikas.
- [18] *V. Candace's Sunshine* 'William Rogers' AM/AOS; exhibitor: Thomas G. Coffey; photographer: Greg Allikas.
- [19] *Rntda*. Pamela Frederick 'Crownfox' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski.
- [20] *V. Crownfox Yellow Sapphire* 'Charlotte Tew' HCC/AOS; exhibitor: Thomas G. Coffey; photographer: Greg Allikas.

orchid, a native of the Himalaya foothills to Thailand, Malaysia and Java. The $\frac{3}{8}$ -inch (1.6-cm) flowers are small but showy in shades of brilliant yellow orange to bright orange. The plants produce multiple erect inflorescences up to 5 inches (12.7 cm) long, densely flowered in a beautiful cylindrical raceme. Flowers can appear any time between February and April (or even later), and they last about two weeks. The plants are compact with thick, fleshy, dark green leaves. Foliage may be obliquely erect or slightly recurved. Mature plants, which can reach a height of about 12 inches (27 cm), may produce seven or eight inflorescences but even plants as small as 3 inches (7.6 cm) can produce one or two spikes.

Historically, *V. miniata* has not been the most popular ascocentrum parent. Only about 7 percent of all registered vandas (the former ascocendas) have *V. miniata* in the background, and most of those also have *V. curvifolia* in their pedigrees. Since Sideris's first cross with it in 1951, *V. miniata* has been registered as a parent in only 119 vandaceous crosses and appears in the background of about 681. (Compare this to *V. curvifolia*, registered as a parent in more than 174 crosses and appearing in the background of more than 3,426 crosses over, at times, at least eight generations of hybridizing!)

Breeding with *V. miniata* has been difficult for several reasons. The pollinia are small, and this species seems less compatible with other vandaceous genera than *V. curvifolia*. The consensus among leading hybridizers is that only a small percentage of the crosses made with *V. miniata* actually produce viable seed.

The orange-yellow color seems especially dominant as well. Virtually all the first-generation hybrids produced with *V. miniata* produce orange-yellow flowers, regardless of the other parent used in the cross. In fact, some AOS awards descriptions for flowers of first-generation hybrids compare them to an "improved" *V. miniata*. Even so, despite these obstacles, *V. miniata* does appear in the pedigrees of some interesting hybrids, and it seems a natural choice for inclusion in any breeding program for clear-yellow vanda flowers.

Vanda Chaisiri is a primary hybrid, a cross of *V. miniata* with *Vanda denisoniana* registered in 1975. Chaisiri demonstrates a beautiful combination of the best features of both parents: the erect inflorescence and intense color of *V. miniata* and the waxy substance and fragrance of *V. denisoniana*. This hybrid

received an AOS Award of Distinction (AD/AOS) in 1981, recognizing a worthy direction in hybridizing.

Another interesting primary hybrid is *V. Kitival*, a cross of *V. miniata* with *Vanda brunnea*. Our cultivar 'Robert' HCC/AOS shows the dominance of *V. miniata* here as well: the erect inflorescence habit has improved the presentation significantly, because the *V. brunnea* inflorescence is typically twisted or curved. The *V. miniata* parent has increased the flower count and improved the spacing between flowers. The vanda parent contributed a pleasant fragrance.

The dominance of *V. miniata* for color became evident in early crosses with hybrid strap-leaf vandas, too. *Vanda miniata* crossed with *Vanda* Amphai produced *Vanda* Pattaya Gold, which bloomed with the erect, densely flowered inflorescences and a bright yellow-gold flower color that are characteristic of *V. miniata* hybrids. *Vanda* Pheun Gold is a combination of *V. miniata* with *Vanda* Pranerm Ornete. The majority of plants from this cross bloomed with clear yellow to bright orange flowers. The color dominance of *V. miniata* completely overrode the spotting and tessellations on the vanda parent's flowers.

One of our goals has been the development of vandas with full-formed, clear-yellow flowers, and it became apparent that breeding lines using *V. miniata* with large-flowered, strap-leaf vanda hybrids were more successful than the earlier primary hybrids with species vandas. Several of these breeding lines have produced the majority of our modern yellow-flowered vandas with ascocenda breeding.

Vanda Pralor is a cross of *V. miniata* with *V. Meda* Arnold. Our cultivar 'Naranja' HCC/AOS amply demonstrates the "best of both worlds" in the influence of both *V. miniata* and *V. curvifolia*. *Vanda* Pralor has been used as a parent in several important crosses: *Vanda* South East Gold is a cross of *V. Pralor* and *Vanda* Madame Kenny. The photograph of *Vanda* South East Gold 'Orange Parfait' AM/AOS clearly shows the deep orange color. *Vanda* Pralor crossed with *Vanda* Nam Phung gives us *Vanda* Udomchai, an extraordinary hybrid that has produced many awarded cultivars. To date, there are 18 AOS awards to plants of this hybrid, including *V. Udomchai* 'Florida Sunshine' AM/AOS. When we crossed *V. Udomchai* back onto *V. (Ascda.) Pralor*, the result was the spectacular *Vanda* Crownfox Inferno.

Crossing *V. Pralor* with *Vanda* Chaisiri gives us *Vanda* Hitachi No-Miya Hidenka. Our cultivar 'Robert' AM/AOS is a beautiful example of this hybrid, which has *V. miniata* as a grandparent on both sides. The lovely fragrance of *V. denisoniana* is still evident in this second generation.

Vanda Su-Fun Beauty is a hybrid of *Vanda* Bangkapi and *V. Pralor*. The cultivar 'Orange Belle' AM/AOS amply demonstrates the influence of *V. miniata* even in the third generation. 'Orange Belle' is one of our favorites because it produces these beautiful flowers on a compact plant, and it blooms for us four to six times a year. The plants, like their *V. miniata* grandparent, can begin blooming at a young age; the more mature plants put on an incredible display and seem almost ever-blooming.

Vanda Fuchs Golden Nugget is a second-generation vanda whose only *Asocentrum* heritage is *V. miniata*. This is a cross of *V. Prachit* Gold, a former *Asocentrum*, and *Vanda* Rasri. *Vanda miniata* is one of the parents of *V. Prachit* Gold; *Vanda* Tubtimtepya is the other parent. This clone, *Vanda* Fuchs Golden Nugget 'Robert' HCC/AOS, is a magnificent example of a concolor flower with a contrasting, rich-orange labellum. Plants of this hybrid are also free-flowering. We crossed it with the yellow form of *V. curvifolia* to produce *Vanda* Fuchs Butter Baby, and our cultivar 'New Dawn' HCC/AOS is a wonderful example of this line of breeding.

Crossing *V. miniata* with *Vanda* Aurawan produces *Vanda* Viroonchan Gold. Eight cultivars of this hybrid have been granted AOS flower-quality awards, including an 85-point Award of Merit to 'Robert'. *Vanda* Viroonchan Gold's most prolific progeny is *Vanda* Fuchs Gold, a cross with *Vanda* Kultana Gold. *Vanda miniata* is the only ascocentrum-type vanda in the pedigree of *V. Fuchs* Gold. The influence of traditional vandas in the background can be seen in the larger size and lesser number of the flowers. *Vanda* Fuchs Gold 'Robert' HCC/AOS produces beautiful clear, golden-yellow flowers, and variety 'Tiger Butter' blooms with maroon-spotted chartreuse flowers. This clone has a striking lime-green lip and bright yellow around the column.

Vanda Fuchs Gold has been used in many hybrids, and the AOS has awarded a number of cultivars for flower quality. More than 70 hybrids are registered with it as one parent, and some of those have gone on to receive recognition from the AOS as well. We have used our cultivar

'Robert' as a parent in more than 20 registered hybrids, including some well-known greges like *Vanda* Fuchs Harvest Moon (Fuchs Gold × Charlie Clark) and *Vanda* Elaine Taylor (Fuchs Gold × Medasand). *Vanda* Crownfox Sundancer, a hybrid of Fuchs Gold and *V. denisoniana*, demonstrates the best qualities of both parents; the waxy, long-lasting flowers are delightfully fragrant.

In 1997, Tom Ritter bred *Vanda* Candace's Sunshine, crossing *Vanda* Yip Sum Wah with Fuchs Gold. Eight beautiful cultivars of Candace's Sunshine have received flower-quality awards from the AOS.

Most recently, we crossed the *Renanthera matutina* with *V. miniata* and produced *Renantanda* Pamela Frederick. It is a beautiful compact grower, which produces wonderful sprays of red-orange flowers what are free-flowering and long-lasting. It is destined to be an award winner.

Perhaps the most significant hybrid on the list of Fuchs Gold progeny is *Vanda* Crownfox Yellow Sapphire. This is a cross of *Vanda* Crownfox Sunshine and Fuchs Gold, and we believe it is the finest yellow, ascocenda-type vanda we have seen in many years. Nearly all the plants produce clear-yellow flowers, and we have seen a color range of chartreuse through bright orange. We introduced this hybrid in the fall of 2001, and, in less than six months, five cultivars received AOS flower-quality awards and the hybrid itself received an AOS Award of Quality. In April of 2002, one cut inflorescence received a Bronze Medal at the 17th World Orchid Conference in Shah Alam, Malaysia. All these plants were awarded on their first flowering, suggesting even more impressive accolades in years to come.

Vanda curvifolia

In the previous section, we looked at the influence of *V. minitia* in breeding modern vandas, which were once known as ascocendas. As beautiful as these orchids are, they are not the mainstream of vanda hybridizing. The most important former ascocentrum *Vanda* species in modern intergeneric vandaceous hybrids is *V. curvifolia*. This is the species used in the earliest hybrids registered by Dr. Sideris in Hawaii: *V. Portia* Doolittle (× *V. lamellata*) and *V. Meda* Arnold (× *V. Rothschildiana*); 50 years later, *V. curvifolia* appears in the pedigree of 95 percent of former ascocenda vandas!

Plants of *Vanda curvifolia* are easily distinguished by their long, recurved, light



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green leaves. The leaves may be toothed at the apex and may show some purplish spots along the edges. Flower color is usually red-orange to cinnabar red, and the blooms are typically about ¾ inch (1.9 cm) in diameter. Sepals and petals are similar, and the flowers are produced on an upright inflorescence about 6 to 8 inches (15.2–20.3 cm) tall. A 6-inch (15.3-cm) plant can flower with one or two bloom spikes, and older plants up to 2 feet (61 cm) can produce as many as six or even seven inflorescences. The plants bloom in March or April, and the bright flowers last about two weeks. *Vanda curvifolia* is native to Nepal, Burma, Thailand and other parts of mainland Southeast Asia. It breeds readily with vandas and other vandaceous genera, and its first-generation offspring tend to show its bright red-orange color about 60 percent of the time.

Vanda curvifolia var. *luteum* is a rare, clear-yellow form of the species. I first saw one in Thailand and purchased the plant from a grower in Chiang Mai in the mid-1980s. We selfed it, but germination was poor, and we raised only a few plants to blooming size; all had clear-yellow flowers. Our cultivar 'R.F. Orchids' AM-CHM/AOS is pictured above (22). Initially, it seemed an obvious addition to our breeding program. Most of the first-generation progeny exhibited the beautiful clear-yellow color of this parent plant, but as it seemed a reluctant breeder and we had such excellent results breeding clear yellows with other parents, particularly *Vanda* Fuchs Gold, the yellow form of *V. curvifolia* has not been a major influence in our hybridizing program. *Vanda* Fuchs Butter Baby, a cross of *Vanda* Fuchs Golden Nugget 'Robert' with *V. curvifolia* var. *luteum*, was featured in the discussion



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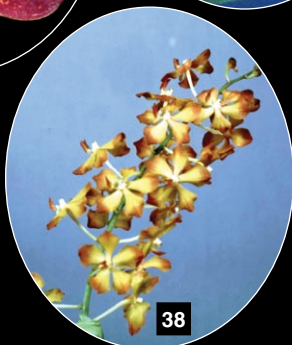
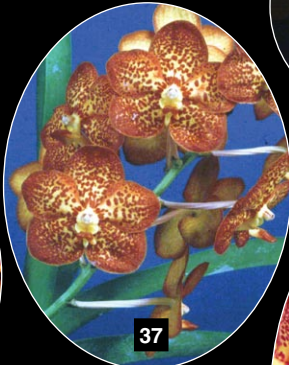
- [21] *V. curvifolia* 'Redlands' HCC/AOS; exhibitor: R.F. Orchids, Inc.
- [22] *V. curvifolia* 'R.F. Orchids' CHM/AOS; exhibitor: R.F. Orchids, Inc.
- [23] *V. curvifolia* f. *franksmithiana* 'AM-CHM/AOS'; exhibitor: Krull-Smith.

of *V. minitia* hybrids.

A new color form has recently been added to the family of the *V. curvifolia*. It is *Vanda curvifolia* f. *franksmithiana* 'Shocking Pink'. This plant was discovered a little over 10 years ago and brought in by Frank Smith who sent it to Dr. Harold Koopowitz. He recognized the new color form and called it f. *franksmithiana*. It has since been mericloned, so we are anxious to see what it will produce in its progeny.

Vanda Meda Arnold, the second of Dr. Sideris's early *Vanda* crosses, is one of the most important hybrids with *V. curvifolia*

VANDA CURVIFOLIA PROGENY



- [24] *V. Eileen Beauty* 'Malibu Ruby' HCC/AOS; exhibitor: Arthur Freed Orchids; photograph from the AOS archives.
- [25] *V. Fuchs Fancy* 'Robert' AM/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [26] *V. Yip Sum Wah* 'Joan' AM/AOS; exhibitor: Paul Sheetz; photographer: Maurice Marietti.
- [27] *V. Vermilion Delight* 'Red Dragon' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [28] *V. Lowell Jacks* 'Crownfox' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas.
- [29] *V. Suk Sumran Beauty* 'Bubblicious' AM/AOS; exhibitor: Curtis Gean; photographer: Curtis Gean.
- [30] *V. Ashley Lowe* 'Lovely' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [31] *V. Guo Chia Long* 'Spotty' AM/AOS; exhibitor: Muse's Tropic1 Orchids; photograph from the AOS archives.
- [32] *V. Fuchs Royal Dragon* 'Indigo' FCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [33] *V. John De Biase* 'Flame' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [34] *V. Fuchs Baby Doll* 'Starrlyn' AM/AOS; exhibitor: Richard Farwell; photographer: Greg Allikas.
- [35] *V. Ng Hee Seng* 'Fuchs Sunset' AM/AOS; exhibitor: Xanadu Orchids; photograph from the AOS archives.
- [36] *V. Fuchs Spotted Cat* 'Kirk' AM/AOS; exhibitor: Kirk Hoo; photographer: Claude W. Hamilton.
- [37] *V. Ken Kone* 'Crownfox Sundancer' AM/AOS; exhibitor: R.F. Orchids, Inc.; photographer: Greg Allikas.
- [38] *V. Red Gem* 'Naranja Sunset' HCC/AOS; exhibitor: R.F. Orchids, Inc.; photograph from the AOS archives.
- [39] *V. Crownfox Golden Dawn* 'Pamella Dupuis' AM/AOS; exhibitor: Tony Romani; photographer: Greg Allikas.

as one parent. Plants of *V. Meda Arnold* bloom in a wide range of colors, from pink and salmon through many shades of red and even purple, and it is one of the most-awarded vandas in the AOS records. The AOS had awarded this grex 66 times. It is a parent of 209 other crosses and appears in the pedigrees of nearly 1,700 vandaceous hybrids. It was an important early building block for our modern vandas, and the progeny of several self- and sib-crosses produced superior cultivars. The cultivar 'Coral Reef' received an Award of Merit from the AOS.

Crossing *V. Meda Arnold* back onto *V. curvifolia* produced *Vanda Eileen Beauty*. Most cultivars produce red flowers — in tones from cherry to maroon — but a few bloom in shades of pink or rosy lavender. There are 20 AOS flower quality awards to cultivars of this lovely hybrid.

Vanda Eileen Beauty crossed back to *V. curvifolia* gave us *Vanda Vermilion Delight*. *Vermilion Delight* is $\frac{3}{4}$ *V. curvifolia*, $\frac{1}{8}$ *Vanda sanderiana* and $\frac{1}{8}$ *Vanda coerulea*. The result, as demonstrated by *V. Vermilion Delight* 'Redland' HCC/AOS, is actually a glorified *V. curvifolia*, and we have used this beautiful cultivar in our breeding program to develop intense color and full form. *Vermilion Delight* 'Robert' is a rich red with a bright yellow column and red and orange labellum, and the cultivar 'Red Dragon' HCC/AOS has somewhat larger flowers than most. We have used this cultivar in our hybridizing as well.

Vanda Fuchs Fancy is one example of *Vermilion Delight* breeding, in this case using the 'Redland' cultivar in a cross with *Vanda Kasem's Delight*. The intense color of this inflorescence is exactly what we were looking for.

Perhaps the most significant *V. curvifolia* hybrid and parent is *V. Yip Sum Wah*. This is a cross of *V. curvifolia* and *Vanda Pukele*, originated by Roy Fukumura in Hawaii and registered in 1965. *Vanda Yip Sum Wah* is one parent in nearly 305 vandaceous hybrids and an ancestor of more than 1,200. Cultivars of *V. Yip Sum Wah* have received more than 100 AOS awards, making this one of the most awarded hybrids in AOS judging records. Most cultivars of *V. Yip Sum Wah* bloom with bright red to orange flowers, and a few are delicately spotted.

Hybridizers around the world have used cultivars of *V. Yip Sum Wah* to produce some of the finest modern vandas. *Vanda Suk Sumran Beauty* is a cross of *V. Yip Sum Wah* and *Vanda Gordon Dillon* and was bred in Thailand. *Vanda curvifolia* appears

only once in this pedigree, but the effect on the flowers is obvious. Most cultivars of *V. Suk Sumran Beauty* produce flowers ranging from rich fuchsia to deep violet, or bright pink. Twenty-eight cultivars of this gorgeous hybrid have been awarded by the AOS.

We have used *V. Yip Sum Wah* in our hybridizing program as well, registering more than 42 crosses in the past 35 years. *Vanda Ashley Lowe*, a cross of *Vanda Sunchart* and *V. Yip Sum Wah*, has received several awards. Two cultivars, 'Lovely' and 'Valentine', have received AOS flower quality awards, and we are particularly proud of 'Crownfox' AM/RHS, recognized by the Royal Horticultural Society at the 1999 Chelsea Flower Show.

The intense, clear fuchsia flowers of *Vanda Lowell Jacks* 'Crownfox' HCC/AOS are an exquisite result of crossing *V. Yip Sum Wah* with *Vanda Fuchs Blue*. The strap-leaf vanda parent in all these hybrids has a considerable fraction of *V. coerulea* in its ancestry (more than 60% in the case of *V. Fuchs Blue*), contributing to the production of the cooler fuchsia, purple and pink pigments in the flowers.

Vanda Fuchs Royal Dragon is a cross of *Vanda Fuchs Delight* and *V. Yip Sum Wah*. Several cultivars, including 'Robert', have been awarded but the best of the grex is 'Indigo'. This plant received an AM and later an FCC/AOS of 92 points on a branched inflorescence.

Vanda John De Biase is one of the most notable of *V. Yip Sum Wah's* descendants. This is an extraordinary hybrid resulting from the cross of *V. Yip Sum Wah* and *V. Kasem's Delight*. In addition to four FCCs from the AOS, the cross has an Award of Quality and 30 other flower-quality awards to various cultivars. *Vanda John De Biase* 'Flame' HCC/AOS is typical of the red-orange flowers on many plants of this cross. *Vanda John De Biase* 'Lava Flow' produced perfectly formed flowers on a towering inflorescence that received a Silver Medal from the South Florida Orchid Society, and then a 91-point FCC from the AOS. The electric-red flowers presented themselves perfectly above the plant on a heavy inflorescence.

Vanda John De Biase plants bloom in a wide range of other colors: variety 'Cotton Candy' AM/AOS is a beautiful fuchsia, and the stunning violet variety 'Denise' HCC/AOS received its award as a first-bloom seedling. About half of the *V. John De Biase* plants produce orange flowers; 30 percent of them are pink, 10 percent are dark violet to purple, and 10 percent are deep red.

We had high expectations when we introduced several cultivars of *V. John De Biase* into our breeding program. We discovered that plants of this grex do not breed readily. We tried 20 different crosses with *V. John De Biase* 'Lava Flow', and none of them produced viable seed. Some years later, we tried again when the plant had grown to more than 4 feet (1.2 m), and the mature plant did produce viable seed. Germination was poor, however, so we have few progeny from this magnificent cultivar. Unfortunately, *V. John De Biase's* performance on judging tables has not yet translated to equivalent success in hybridizing.

Vanda Guo Chia Long results from crossing *V. Yip Sum Wah* with *Vanda Memoria Madame Pranerm*. This Thai hybrid was registered in 1970, and some years later T Orchids meristemmed a remarkable cultivar, 'Spotty'. One was awarded an AM/AOS in 1991, and 'Spotty' has become one of our favorite stud plants, producing free-flowering hybrids in gorgeous sunset tones, and most were beautifully spotted and marked.

We believe that *V. Guo Chia Long* 'Spotty' AM/AOS is one of the most important *Vanda* parents in modern hybridizing for several reasons. First and foremost, it introduced an entirely new palette of color and markings, producing beautifully formed flowers spotted and freckled with contrasting colors. Second, 'Spotty' is a prolific parent; it breeds readily and produces generous quantities of viable seed. And third, most of the progeny are compact, free-flowering plants.

To date, our most successful *V. Guo Chia Long* hybrid has been *Vanda Fuchs Baby Doll*. This delightful vanda resulted from a cross of *Vanda Gold Buttons* and *V. Guo Chia Long* 'Spotty'. *Vanda Gold Buttons* is a hybrid of *V. Portia Doolittle* — Dr. Sideris's first vanda hybrid, registered in 1949! — and *Vanda parviflora*. *Vanda Fuchs Baby Doll* received an Award of Quality from the AOS, and 13 cultivars have received flower-quality awards.

We crossed *V. Guo Chia Long* 'Spotty' with *V. Fuchs Gold* 'Robert', our best yellow vanda parent, and registered this cross as *Vanda Fuchs Spotted Cat*. The cultivar 'Crownfox' received an 81-point AM/AOS for its beautifully spotted, golden-yellow flowers.

Vanda Crownfox Golden Dawn is typical of our more recent *V. Guo Chia Long* progeny. The other parent, *V. Fuchs Harvest Moon*, has *V. Fuchs Gold* as one parent, so this breeding line also includes

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the best characteristics of several of our preferred stud plants. Most plants produce yellow or golden flowers with red markings, but a few have bloomed with gorgeously spotted white flowers.

As a general rule, we do not reintroduce species such as *Vanda merrillii* directly into an established breeding line; this can negate all of the prior effort involved in overcoming the species' undesirable characteristics. But I have an exceptional cultivar of *V. merrillii*, passed down to me from my grandfather's collection, and I was curious about its potential as a stud plant. This cultivar produces deep mustard-yellow flowers heavily overlaid with glossy, lacquer-red, and the flowers have excellent form for the species. So, we crossed it, experimentally, with *V. Guo Chia Long* 'Spotty'.

To our delight, this cross produced another remarkable hybrid: *Vanda* Ken Kone (*merrillii* × *Guo Chia Long*). This grex has received nine AOS flower quality awards to date. The intense red color is due in part to the influence of *V. merrillii*. We believe it to be the finest *V. merrillii* hybrid ever made.

One of our recent hybrids was with the *Vanda* Sagarik Gold, *Vanda* Tere Camacho. Two varieties have proven to be frequent bloomers, and we have high expectations for them.

Crossing *V. curvifolia* with *V. merrillii* gave us the primary hybrid *Vanda* Red Gem. For the cultivar 'Naranja Sunset' HCC/AOS, notice the unusual markings. *Vanda* Red Gem crossed with *Vanda* Darcey Starr — another hybrid with *V. curvifolia* as one parent — produced *Vanda* Ng Hee Seng. I think you will agree that our cultivar 'Fuchs Sunset' AM/AOS is simply stunning...we meristemmed it because of its striking color and pattern.

Vandas are far from the only vandaceous hybrids influenced by *V. curvifolia*. The species interbreeds readily with many other genera, and it has made important contributions as an ancestor of many intergeneric crosses among the vandaceous genera. *Vanda curvifolia*'s legacy includes brilliant color, floriferousness and compact plant size.

Vanda ampullacea

We have looked at the contributions of *V. miniata* and *V. curvifolia*, two of the three most familiar ascocentrum-type species, in the creation of our modern vandas. These two species are the "ascocentrum" component in the overwhelming majority of vandas; only 32 of the hundreds of hybrids with an ascocentrum-type species as one parent



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- [40] *V. ampullacea* 'Roman Holiday' AM/AOS; exhibitor: Joseph Romans.
- [41] *V. ampullacea* 'Barbara' JC/AOS; exhibitor: R.F. Orchids, Inc.
- [42] *V. ampullacea* var. album 'Fuchs Snow' CHM/AOS; exhibitor: R.F. Orchids, Inc.
- [43] *V. ampullacea* 'Lauray' CCM/AOS; exhibitor: Judith Becker.

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have *V. ampullacea* as that parent.

The typical *V. ampullacea* produces deep rose-magenta to pale-fuchsia flowers. The plants generally bloom in March or April, with flowers lasting about two weeks. Plants can produce many small flowers on an upright — but usually short and somewhat crowded — inflorescence, and often produce multiple inflorescences from the leaf axils. The plants are generally compact with thick, flat, dark green leaves about 6 inches (15.2 cm) long and about an inch or less (2.5 cm) wide. The leaves are unevenly notched at the tip and may show dark reddish freckling during periods of high light and cool temperatures. *Vanda ampullacea* is native to the tropical Himalayas, Burma and Thailand and requires some cooling in the winter to initiate spring flowering.

Vanda ampullacea 'Roman Holiday' BM/SFOS-AM/AOS is a beautiful example of this species. But even on this award-winning plant we can see how the flowers are crowded and produced quite close to the stem, so they are somewhat obstructed by the foliage. This unfortunate bloom habit is often passed on to its progeny, and this is one important reason that *V. ampullacea* is the least popular of the "ascocentrum" species parents.

There are some beautiful and rare color forms of *V. ampullacea*, and these plants are worth growing in their own right even if they are not much used in hybridizing. *Vanda ampullacea* 'Barbara' JC/AOS is an example of the pale-pink form. This lovely cultivar was commended for its unusual and attractive color.

A very rare white form, *V. ampullacea* var. *album* 'Fuchs Snow' CHM/AOS, is also known. Unlike many alba forms, this one is a robust grower. It blooms about a month later than the normal-colored form of the species, but otherwise grows under the same conditions.

The orange form, *V. ampullacea* var. *aurantiacum*, has become more widely available in the last few years. 'Lauray' CCM/AOS demonstrates the beautiful color and amazing floriferousness of this charming species.

Perhaps the most desirable color form is the rare *V. ampullacea* var. *moulmeinense*, which produces exceptionally dark flowers. 'Suzi' JC/AOS, was commended for its deep wine-red color.

With these bright colors and compact growing habit, *V. ampullacea* ought to be a useful parent in hybridizing. Unfortunately, its short, crowded inflorescence seems dominant in most of



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GREG ALLIKAS



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FRANCISCO RAMOS

- [44] *V. Baby Blue* 'Leslie Slora' AM/AOS; exhibitor: Ellenberger's Orchid Eden.
- [45] *V. Pink Thing* 'Halcyon' AM/AOS; exhibitor: Wilkins Orchids.
- [46] *V. Pink Thing* 'Ken Kone' HCC/AOS; exhibitor: Ken Kone.
- [47] *Rhynchozentrum* Lilac Blossom 'Ponce' AM/AOS; exhibitor: Eugenio Rivera, MD.
- [48] *V. Penang Sunset* 'Kirk' HCC/AOS; exhibitor: Kirk Hoo.
- [49] *Seidenanda* Orchid Joy 'HCC/AOS; exhibitor: M.E. and Joy Thompson.

its progeny, and unlike *V. curvifolia* and *V. miniata*, *V. ampullacea* seems to be a reluctant breeder when crossed with *Vanda* or hybrids of the former genus ascocentrum and *Vanda*.

The first hybrid registered with *V. ampullacea* is *Vanda* Baby Blue, registered in 1970. A cross of *V. ampullacea* and *Vanda coerulescens*, this cross seems to have been a dead end, as the registration records show no further hybridizing with it. One cultivar, 'Leslie Slora', received an AOS Award of Merit in 1989.

Two primary hybrids, crosses of *V. ampullacea* with other ascocentrum species, also appear in the records. *Vanda* Mona Church, registered in 1972, is a cross of *V. ampullacea* and *V. miniata*. T Orchids registered *Vanda* Khem Thai (*curvifolia* × *ampullacea*) in 1980, and Dr. David Grove reports that this hybrid bloomed with watermelon-colored flowers. Neither of these hybrids appears in the registration records as a parent.

Vanda Pink Thing (Rose Seidel × *ampullacea*), registered in 1977, has received several AOS flower quality awards ('Halcyon' AM/AOS and 'Ken Kone' HCC/AOS). *Vanda* Baby Pink (Meda Arnold × *ampullacea*), registered in 1983, has one AOS award ('Garney' HCC/AOS), and no registered progeny. No hybridizing has been recorded with either of these grexes.

Vanda ampullacea seems to be more compatible as a parent when crossed with other vandaceous genera. There are 16 reported intergeneric hybrids with *V. ampullacea* in the pedigree. Perhaps the most recognizable cross is *Vandachostylis* (*Van.*) Lilac Blossom, a hybrid of *Rhynchostylis coelestis* and *V. ampullacea*. The AOS has granted six flower-quality awards to cultivars of this grex, and several of the plants are described as having lilac-blue flowers.

Even if this charming species has played no major role in hybridizing to date, it is still a wonderful orchid to include in one's collection. The plants are compact and extremely floriferous. With proper conditions, plants of *V. ampullacea* can be robust growers, producing handsome, small specimen plants. The AOS has granted more awards to cultivars of this species than to all cultivars of *V. curvifolia* and *V. miniata* combined; 18 of these are culture awards, granted to the growers for plants displaying literally hundreds of flowers on dozens of inflorescences. Five cultivars have received AOS Judges' Commendation awards (JC/AOS) for color, and there is even an AOS First Class



CLAUDE W. HAMILTON

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ERNEST WALTERS

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Certificate (FCC/AOS) among the awards to *ampullacea*.

These small-flowered species have enriched our collections during the last several decades. Their compact growth habit, floriferousness and brilliant color have made significant contributions to hybridizing in the vandaceous alliance, and the plants are well worth growing for their own sake.

— Bob Fuchs, *R.F. Orchids, Inc.*, 28100 SW 182 Ave., Homestead, FL 33030 (email: info@rforchids.com).

Further Reading

- These excellent works have extensive bibliographic listings, including references to the scientific papers discussing taxonomic issues.
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Growing *Sarcochilus* in Coastal California

BY KENNETH P. JACOBSEN, PHD

PHOTOGRAPHS, UNLESS OTHERWISE CREDITED,
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[1] Modern breeding has produced *Sarcochilus* flowers in the orange through salmon colors, like this Kulnura Taser 'Bentley' HCC/AOS. This plant, which was awarded in May, 2019, is a cross of (Kulnura Need x Kulnura Kaleidoscope).

[2] This Kulnura Rusty 'Red Robin' shows the vigor of most modern *Sarcochilus* hybrids. This plant is in a 8-inch (20 cm) bulb pan, has a diameter of about 20 inches (50 cm), and has at least 25 inflorescences. It has been in this bulb pan for less than 18 months.

IN COASTAL CALIFORNIA, orchid fanciers typically think of plants like cymbidiums, various types of large Brazilian cattleyas, Australian dendrobiums, and perhaps zygotepalums and sobralias. Historically, many growers have had the odd plant or two of *Sarcochilus hartmannii* or *Sarcochilus fitzgeraldii* but small, white flowers with a touch of color at the center only did so much to inspire collecting more *Sarcochilus*.

Occasionally, one would see a “red” *Sarcochilus*, which was often faded and dull in color, but then about the turn of the millennium, suddenly more colored *Sarcochilus* started appearing. Several breeders in Australia grasped hold of this change. With the short turnaround time for a new generation of hybrid *Sarcochilus*, we now have an enormous variety of colors, patterns and forms, such that it would be possible to assemble a large collection of *Sarcochilus* in which the flowers on each plant are completely different than the flowers all the other plants.

I will admit that I am somewhat spoiled by the climate in coastal California, especially when it comes to growing orchids. There are many genera that can be grown outside under cover, as long as care is taken with watering. In general, if you are able to grow cymbidiums successfully, you will find *Sarcochilus* are even easier to grow, and probably a little more tolerant of wet conditions.

Like everyone else, I started with *Sarcochilus hartmannii*, and then later added a *Sarcochilus fitzgeraldii*. Because these were the only *Sarcochilus* that could be easily found, I was careful in the selection of the plants, and chose plants where the flower size and form were relatively good compared to the average plants. The challenge then became one of how well these plants could be grown, so I gradually grew them larger, and experimented with various potting media and containers. Eventually, with the *Sarcochilus hartmannii*, I settled on growing the plant in a shallow pot or bulb pan with relatively coarse media, and the plant has recently been moved from an 8-inch (20-cm) bulb pan to a 10-inch (25-cm) bulb pan. When it bloomed last year in the 8-inch (20-cm)-diameter bulb pan, it had about 40 inflorescences, and I would estimate it had over 600 flowers. So far this year, it is already showing more than 40 immature inflorescences, and more are still coming.

I have found that for me, *Sarcochilus fitzgeraldii* has an interesting habit. I was



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[3] The medium used for these plants is kiln dried *Pinus radiata* bark from New Zealand, with about 5% perlite and 5% charcoal (when available) added. For pots of less than 8 inches (20 cm) in diameter, the particle diameter averages a little more than 0.4 inch (1 cm), and for pots of 8 inch (20 cm) diameter and larger, the particle diameter is closer to 0.8 inch (2 cm).

[4] A *Sarcochilus* seedling showing the root system. This plant was grown in a 3.15-inch (8 cm) square pot for one year, and is now going into a 6-inch (15 cm) azalea pot. If repotted every two years or less, the medium releases easily from the roots.

[5] The root system on a larger plant. This plant was put into a 6-inch (15 cm) azalea pot two years previously, and is now ready for an 8-inch (20 cm) or 10-inch (25 cm) bulb pan, or to be divided.



- [6] This *Sarcochilus* Kulnura Glow demonstrates that peloric plants can be found in other than just the typical white *Sarcochilus*.
- [7] Yellows have traditionally been a difficult color for *Sarcochilus* hybrids. Here we see the result of an atypical breeding in *Sarcochilus* Evening Star.
- [8] Another first bloom *Sarcochilus* seedling in a 6.5 cm square pot. Also 18 months out of flask, this one is *Sarcochilus* (Kulnura Need x Kulnura Lady).
- [9] *Sarcochilus* Kulnura Crystal, demonstrating how far white *Sarcochilus* have come in the past 20 years. They are far larger and fuller than the *hartmannii* and *fitzgeraldii* species in their background, and the growths are extremely robust. This is *Sarcochilus* Kulnura Crystal 'Bentley', which received an HCC/AOS in May.
- [10] Improvements continue quickly in all color forms, such as this *Sarcochilus* Kulnura Lemon, which has improved on the shape of the awarded poached egg form of *Sarcochilus* Coolendel.
- [11] Current breeding is pushing from the yellows and attempting to create uniformly colored oranges. Here in *Sarcochilus* Kulnura Mission is an example of the progress.
- [12] Spotting and blotching can also now be seen in the same flowers, such as in this *Sarcochilus* Kulnura Passion 'Wild'. Photograph courtesy of Scott Barrie.
- [13] The newest *Sarcochilus* hybrids are even starting to show color clumping close to what one sees in harlequin type *Phalaenopsis*. This is *Sarcochilus* Kulnura Leppard 'Adrenalize'. Photograph courtesy of Scott Barrie.
- [14] Another example of harlequin-like blotching can be seen in *Sarcochilus* (Kulnura Ballerina x Kulnura Gifted). Photograph courtesy of Scott Barrie.
- [15] *Sarcochilus hartmannii* 'Fred Shull' in 8-inch (20 cm) bulb pan. There are about 40 inflorescences with well more than 600 flowers.

late removing the spent inflorescences two years ago, and I noticed that plantlets were forming at the ends of the spikes. It was developing much like the classic spider plant often seen as a houseplant, and so I have now put this in a basket to encourage this behavior. It has only been in the basket for a little over six months, but the plant looks to be just as happy as when it was in a shallow container, and it is also starting to show inflorescences. My expectation is that in a year or two, growths and inflorescences will be trailing over the sides of the basket, making a great hanging display.

Many growers will tell you that *Sarcochilus* must be grown in this media or that media with some commercial growers even going exclusively to nonorganic media. While nonorganic media work remarkably well for a commercial grower where the entire greenhouse is filled with the same genus, I am a hobbyist. I have a mixed collection. I have to find a medium that works for me, and also is compatible with my watering and fertilization habits for all the other genera of plants in my growing area. For me, I have settled on a chunky bark medium, specifically, *Pinus radiata*. To that I add about 10-percent perlite, and, if I have it around, I will also add about 5-percent horticultural charcoal. I try to find perlite and horticultural charcoal that is about the same size as the bark to preserve an open medium. I find the perlite holds the medium a little more open than without the perlite, and better drainage always helps. I am not sure the charcoal really makes any difference at all to the plants, but it makes me feel better. For plants in 7-inch (17-cm)-diameter containers and smaller, I use bark that averages about 0.3 inch (0.75 cm) in diameter. For pots in larger containers, I use bark that is the next available size.

I have always found that to be successful in growing a plant well, you need to be successful at growing roots well. This bark-based medium seems to be quite successful with root growth, and the foliage of the plants follows suit. Ideally, all the *Sarcochilus* in the collection are repotted every two years immediately after blooming. Although the medium is still in perfectly good condition, the plants are pushing themselves up out of their containers, and the tops of the plants are hanging well over the sides of the container. On occasion, plants in 8-inch (20-cm)-diameter bulb pans have pushed themselves up 2.75–3.1 inches (7–8 cm). The biggest problem I have experienced



[16] Spikes starting in early January. Note the stubs lower on the growth left from the previous year's blooming. Depending on temperatures, these spikes will mature to blooming in two to three months. Inset photograph taken in mid-February. Note the double inflorescences at some nodes, and the new inflorescence on nodes that bloomed last year. This single growth shows 12 inflorescences, so far.

is that the roots easily escape through the drainage holes at the bottom of the containers, and splay themselves out on the benchtops. It can be quite difficult to remove a plant from the benchtop after two years without breaking a lot of roots.

Sarcochilus send up side growths easily and numerous, so the decision that needs to be made at repotting time is whether to divide the plant or try to keep it in one piece and pot up to a larger container. If the decision is made to keep the plant together and grow it larger, significant attention must be paid to not letting the plant split under its own weight while repotting. This is not a

simple as it sounds. The plant can actually be quite heavy, so holding it up while removing old medium can pose quite a risk of accidental dividing. If growing for culture, it sometimes makes sense to cut the original growth down to its base but preserving the underlying rhizome, as it has likely become long and out of balance as compared to the rest of the younger growths. If there are roots lower on the stem that has been removed, it can be potted up, and become a spare division of the plant.

From middle spring until late fall, the *Sarcochilus* collection is watered and fertilized every three days, while during

the cooler parts of the year, the plants may only need fertigation once every 10 days or so, highly dependent on the weather. We were blessed with good water. The total dissolved solids for the water as it leaves the faucet is less than 100 parts per million. To that I add about 400 parts per million of 15-5-15 soluble fertilizer with calcium, magnesium and other minor nutrients. Once a month during spring, I will substitute calcium nitrate at the same concentration, and, on occasion in the spring, I will apply Epsom salts (magnesium sulfate).

I have grown the plants in covered outside areas and in a large, unheated greenhouse under about 50–60 percent total shade. In both areas, the important factor for good culture is the ability to control water on the plants. The temperature in either the outside or inside growing conditions can drop to freezing for short periods during the winter, and can rise to well over 100 degrees F (about 40 degrees C) during the summer. The plants tolerate these conditions well, as long as the fertigation schedule is adjusted accordingly. In fact, the plants seem to thrive with a large day–night variation in temperature, as in the summer it is common to have a 36-degree F (20-degree C) difference between the nighttime low temperature and the daytime high temperature.

I use no fans and depend only on convection and outside air movement for air movement around the plants. In the unheated greenhouse, there is a side vent and a roof vent, and these provide for gentle air movement all day long on warm days. The only automatic system I use in either growing area is a simple thermostat coupled to an interval timer controlling a solenoid. These control a misting system, such that when the temperature exceeds my chosen amount, the mist heads put out a fine mist for one minute out of every 10 minutes. This system is not exclusively used for the *Sarcochilus*, but rather it is used for all the orchids. While outside humidity in coastal California may drop to 20 percent or less during dry summer days, I have found this simple system keeps the humidity in the growing area at 60 percent or higher.

For me, seedlings bloom for the first time between six months and 24 months out of flask, depending on the time of year the plant was deflasked, and the maturity of the plants in flask. There are almost always some seedlings from a flask that bloom at less than one year from flask, and a high percentage have bloomed



- [17]Trays of *Sarcochilus* seedlings in 2.6-inch (6.5 cm) square pots. These plants are about six months out of flask.
- [18]The same trays of *Sarcochilus* seedlings about four months after being potted into 2.6-inch (6.5 cm) square pots.
- [19]These same plants again, but now about 10 months after being potted into 2.6-inch (6.5 cm) square pots.
- [20]Another view of these same plants, with a spray bottle added for scale. Many of these plants were starting to show spikes at the time of this photo, at about 18 months out of flask. About 5% bloomed the previous year, at about seven months out of flask.
- [21] A plant growing in a 8-inch (20 cm) square basket showing quite a few new side growths.
- [22] Another plant growing in an 8-inch (20 cm) tapered round basket. This plant has been in the basket for almost 10 months, and root action can be seen at the top of the medium and from near the bottom of the basket. Note that this photo was taken in mid-January, and the root tips are obviously in active growth.

by the end of the second year from flask. First-bloom seedlings will almost always have several inflorescences, with the better ones having six or more with 5–10 flowers per stem. Both numbers improve on subsequent bloomings, and a specimen-sized plant is not difficult to obtain with care at six or seven years from flask. *Sarcochilus* hybrids are easy enough to bloom, so that flowering in flask is not uncommon.

Sarcochilus have the wonderful property of blooming on the same stem year after year after year. It can bloom from each leaf axil, and can actually send up two inflorescences from each axil. If only one inflorescence is sent up in one year, that same leaf axil could send up a second inflorescence the following year. Because of this, I have seen as many as 14 inflorescences on a single growth in a single year, and that same growth may have had a dozen inflorescences the previous year, or might have that many the next year. With the aggressive side-growth production of these plants, it is easy to see how that leads to thinking about growing specimen plants.

The changes in the available color forms of *Sarcochilus* that have become available over the past 20 years have made accumulating a collection a lot of fun. Various good reds were probably the first readily available color form, followed by *Sarcochilus* with faint color patterning that has become stronger and more distinct as new varieties reach the market. There now are those in ranges of pinks, yellows, salmons, oranges and reds, some almost solid in color, some heavily patterned and marked and some that delicately exhibit tone on tone. There are now peloric flowers available in white, yellow and red colors, and there will likely be more colors of peloric flowers available within the next few years. Two color forms I always find pleasing are the “poached egg” color, which is a white flower with a strong yellow center, and a good yellow flower with a strong red center.

The newest color trends are toward harlequin-type color blotching, much as would be seen in harlequin-type *Phalaenopsis*. This is best demonstrated by plants bloomed in Australia by Scott Barrie of Barrita Orchids this past October such as Kulnura Leppard ‘Adrenalize’ or an unnamed seedling of Kulnura Ballerina × Kulnura Gifted. There are even some new seedlings that exhibit spotting, blotching and color shading all in the same flower, such as Kulnura Passion ‘Wild’. Every year, there seems to be more colors available,



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and the form of the flowers is becoming fuller, rounder, and more appealing from a judging perspective as well as an aesthetic perspective.

Although there are occasional inflorescences during the rest of the year, most of the *Sarcochilus* species and hybrids in my collection seem to all bloom at about the same time of year, every year. The new inflorescences start developing in late January as the days start to lengthen, then by the end of March, the first flowers are appearing. Mid-April is almost always a colorful show as the blooming is at its peak, and the *Sarcochilus* growing area is a riot of color.

—Ken Jacobsen (email: kenneth.p.jacobsen@gmail.com)

[23] Peak blooming of the author’s selected *Sarcochilus* plants in 2020.

[24] Peak blooming of the author’s selected *Sarcochilus* plants one season earlier — 2019. Note the phenomenal improvement.

[25] *Sarcochilus* can be very floriferous, even on a first-bloom seedling such as this *Sarcochilus* (Kulnura Firemist × Bonanza) in a 2.6-inch (6.5 cm) square pot. It is about 18 months out of flask.

[26] This *Sarcochilus* (Kulnura Spice × Fairy) is 30 months out of flask, in a 4-inch (10 cm) round pot, and has at least 18 inflorescences.

How I Grow Vandas in My House in Canada

text and photographs by Synea Tan

MOST GROWERS WOULD not consider Toronto, Canada, as “vanda country”! But where there is a will, there is a way. Who can resist the temptation of growing Vanda Alliance orchids with their stunning colors? Like growers everywhere, I adapt to my plant’s needs but also try to get them to adapt to my conditions, which can be a challenge. I have received 22 AOS awards on genera from cymbidiums to *Chiloschista* to *Cycnoches*, all grown in my house and many placed outdoors in the summer.

I bought *Rhynchorides* Memoria Suranaree ‘Synea’ (*Aerides lawrenceae* × *Rhynchosstylis coelestis*) in October 2011 and it was awarded an AM/AOS in 2015. I had bought vandas before, but I killed them. Such attempts are frustrating to all growers, but I am persistent, so I decided to try a different method. I used a big, transparent plastic container and poked holes a bit less than an inch (2 cm) from the bottom. To prevent the roots from going directly into the water, I inserted an upside-down plastic blueberry box in the bottom of the big container. The box was more than an inch (2 cm) deep to elevate the plant roots above the bottom of the poked holes, so that the roots were not touching the water. It is important to first soak the roots in water to soften them so that they will fit into the container without breaking or bruising badly. For roots that insist on growing outside the container, I cover them with Spanish moss.

In the winter, the plant is grown indoors with LED lights and hangs in a south-facing window in a second-floor bedroom that I converted for growing orchids. The daytime room temperature is 72 F (22 C), although sunny days are warmer. During the night, the room temperature runs about 61–64 F (16–18 C). The heat vent in the room is kept closed, and the room door is closed every night and opened in the morning, which allows the temperature to drop at night and rise during the day. Room humidity at night is 100 percent, while the daytime humidity is 75–85 percent. In the summertime, all the vandas are outdoors hanging under the arbor along the east edge of my yard. I try to mist the vandas every day with rainwater that has fertilizer in it (1/4 tsp/



gal [1.6 ml/4 l]).

I also successfully grow vandas in a plastic pot. I cut eight long holes (the holes are 2 in [5.1 cm]) in the side of the pot, then fit the water-soaked roots in, and loosely fit Spanish moss in between the roots and the pot. Basically, if you can keep the roots moist and airy, the plant will do well. A clear pot might provide more light to the roots, although this method works well with deep standard, green plastic pots.

[1] The author’s converted bedroom growing space.

[2] *Rhynchorides* Suranaree ‘Synea’ AM/AOS grown by the author.

[3] Aerial roots surrounded by Spanish Moss helps to maintain moisture and humidity around these exposed roots.

– Synea Tan, 28 Torrens Avenue, Toronto, Ontario, Canada, M4K 2H8 (email: ricsue1104@rogers.com).

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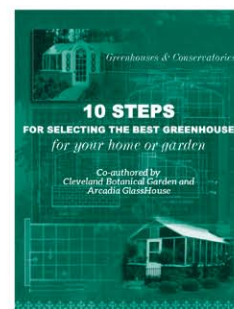


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