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The Genus *Grammatophyllum*

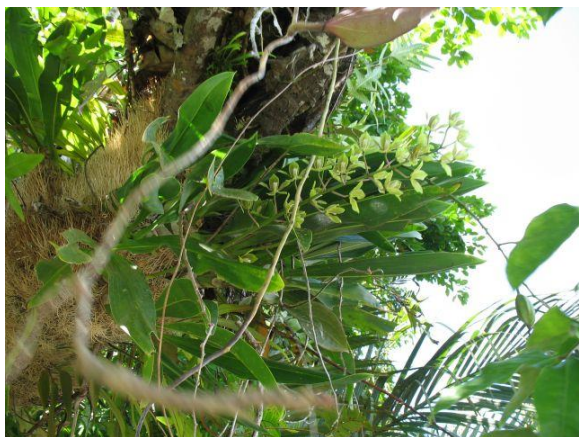
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THE SPECIES ORCHID
SOCIETY OF WA

The genus *Grammatophyllum*



This article was planned during a recent visit to New Guinea recently on a fishing trip that included a little orchid exploration as well. While fishing for black bass in a river on the north coast of New Britain, in a tree overhanging the river, we saw a large flowering plant of *Grammatophyllum speciosum*. In the past, I often have written articles about little plants (botanical curiosities) and thought that it was about time to look at the other end of the spectrum.

This Asian genus includes some of the world's largest orchid plants. In their natural habitat, they often grow to several metres in diameter, and can have hundreds if not thousands of flower racemes. The plant I saw in the

following photograph was nowhere near that size, but I recall a conversation we had with the proprietor of Burnham Nursery in Devon, UK about a large plant they which required a furniture removal van to take to a show. A plant of *Grammatophyllum speciosum* reported to have weighed two tons was one of the highlights in the 1851 exhibition at the Crystal Palace. Apparently, this species is also in the Guinness Book of Records with two metre canes and three metre flower racemes weighing in at more than 2000lbs.

Grammatophyllum was established by C L Blume in 1825, and initially comprised 12 rather confused species which were revised by Schlechter in 1915. The type species is *Grammatophyllum speciosum*. In particular, there continues to be confusion over the name *Grammatophyllum scriptum* which was given to two distinct species by G E Rumph. There are two distinct growth forms in the genus – the first has long pseudobulbs (really fleshy stems bearing leaves) and the other has short, thick pseudobulbs that are not covered by the leaf-bases, and bear only a few leaves toward the apex. Schlechter placed these two forms in sections *Gabertia* and *Pattonia* respectively. The name is derived from the Greek *gramma* (letter) and *phyllon* (leaf) in reference to the dark conspicuous markings on the sepals and petals. The flowers have large showy sepals and petals with a smaller lip that has 3 low keels. The habitat is South East Asia, Indonesia, New Guinea, the Philippines and Polynesia.

This genus is closely related to *Cymbidium*, and is in the Subfamily Vandoideae, Tribe Cymbidieae and Subtribe Cyrtopodiinae, differing specifically in the pollinia which are directly attached to the viscidium in *Cymbidium* and attached by separate straps to the viscidium in *Grammatophyllum*. One of the distinctive features of this genus is the basket of aerial roots that point upward to catch leaf litter that feeds the plant. These aerial roots are very evident in the New Britain photo above. This habit is also seen in *Ansellia africana*, and some plants of *Dendrobium speciosum* will have large numbers of aerial roots, though nowhere near as pronounced as *Grammatophyllum*.

As I have done in previous articles, as there are only 12 species (with many synonyms and varietal names), I will take a closer look at each of the species starting with the type species *Grammatophyllum speciosum* Blume



1825. This is a very large plant with erect pseudobulbs up to 3 m in length and 5 cm in diameter that occurs in South East Asia in Myanmar, Thailand, Laos, Vietnam, Malaysia, Borneo, Java, Moluccas, the Philippines, Sulawesi, Sumatra, Bismarck Islands, Papua and New Guinea and the Solomon Islands. It was originally described by Blume from a plant that collected in the forest near Bogor on the island of Java. It is found in lowland forests as an epiphyte or occasional lithophyte, often adjacent to streams and rivers at low to moderate elevations.

Source: <http://4.bp.blogspot.com/-t6Pyh2itnQQ/TP14QOSnptI/AAAAAAAAABD0/CB3-OdvOmNE/s1600/Grammatophyllum+speciosum+4.jpg>

Dr H Valmayor 1984 in her book "Orchidiana Philippiniana" says that this species has been reported with canes to 7m in length, and is one of the eight species of *Grammatophyllum* that is found in the Philippines. *Grammatophyllum speciosum* can be difficult to grow and flower, not only because it takes an enormous amount of room, but also because it requires winter heat plus good air movement. Otherwise, it can be susceptible to soft rots and water moulds that can quickly kill even a large plant. It is also reported to only flower every second or third year. However, in the tropics, I have seen large clumps of this plant growing very vigorously out in full sun that seem to flower every year.

Grammatophyllum elegans Rchb. f. 1882 is another Philippines species (also been reported in Fiji although Jim Cootes suggests that it might just be a colour variant of *Grammatophyllum scriptum* and that the species is in fact endemic to the Philippines) growing at low elevations from sea level to 300 meters. It is another large hot growing epiphyte with stout, flattened pseudobulbs that carry up to four apical, elliptic-oblong, 30cm leaves. Flowering in spring, the up to 1m racemes have up to 50 long-lasting, slightly fragrant, spotted flowers.



Grammatophyllum elegans is the pod parent of the best known hybrid, *Grammatophyllum Tiger's Paw* registered in 1980.

Photo Source: botolanwildlifefarm.com

Grammatophyllum kinabaluense Ames & C.Schweinf. 1920 is a Malaysian species, coming from, as the name suggests the Mt Kinabalu region in northern Borneo in lowlands and hill forests at low elevations to 900 m, growing as an epiphyte on old primary forest hardwood trees. It is also a large sized, hot to warm growing species with an inflorescence that can reach 3 to 4 meters long. This species is not common in cultivation.



Photo Source: www.wildborneo.com.

Grammatophyllum martae Quisumb. ex Valmayor & D. Tiu 1984 is a recently discovered species endemic to the Philippines. Found at elevations of sea level to 300 meters, it is also a large, hot growing epiphyte with large, slightly flattened pseudobulbs carrying up to 4, oblanceolate, leathery, 60 cm long leaves. Spring flowers are carried on a basal, stout, many flowered, up to 1.5 m inflorescence. Flowers: are up to 4.5 cm wide, dark brown with yellow markings.



Dr. Eduardo Quisimbing originally described this species however the name was not published. Subsequently, Professor Helen Valmayor and Danilo A. Tiu published the byname in 1983 in the Philippines Orchid Review. The species was named after Mrs Martha Montilla Rivilla, a Philippine orchid enthusiast from Negros Occidental, in the Philippines. This species is found only on Negros.

Photo Source: <http://orchidsamore.com/tutorials/Grammatophyllum-%20photo%20-%20culture.htm>

Grammatophyllum measuresianum Weathers 1889 is another large Philippine epiphytic, hot growing species found at elevations below 500m with ovoid, maturely wrinkled pseudobulbs enveloped by a few membraneous sheaths, carrying 4 to 6, apical, broadly lanceolate, to 60 cm long leaves that blooms on a basal, upright to semi-arching, 1.5 m, many flowered, racemose inflorescence that blooms in the summer with imperfect flowers in the bottom few rows and then many faintly fragrant, waxy flowers for the rest of the expanding over time inflorescence. The synonym is *Grammatophyllum grandiflorum*.



Photo source: <http://www.orchidsonline.com.au>

Grammatophyllum multiflorum Lindl. 1838 is another large growing species from the Philippines. Inflorescences of mature orchids reach a length up to 1.50 meters and are packed with up to 100 long-lasting, showy flowers. Like its relatives, this species a hot and humid climate with a lot of sun. Its single flowers reach a size of about 5 cm, and can be in flowers for up to 9 months. There is also a *citrinum* form, seen shown in the picture below.



This species flowers Spring - Autumn

Photo source: <https://www.orchidroots.com/detail/information/?role=pub&pid=92277>

Photo source: <http://purificacionorchids.com/images>



Grammatophyllum pantherinum Rchb.f 1878 is found in New Guinea in lowland forests at elevations from sea level to 1200m. However, there is some disagreement between taxonomists about this species, some asserting that it is synonymous with *Grammatophyllum speciosum* and/or *Grammatophyllum papuanum* It is a large hot growing epiphyte with stout, elongated, densely leafed stems with many internodes and carrying strap-shaped, acute, midrib prominent below, coriaceous leaves. The roots often form 'nest-like' clumps which look quite spectacular. It blooms spring through autumn on basal, stout, many flowered, inflorescences up to 2 m in length.



It has triangular, obtuse, concave floral bracts and large, fleshy, fragrant flowers.

It is reported that on *Grammatophyllum papuanum* inflorescences, which can bear more than fifty flowers, the lowest flowers often have no labellum. This species can be found high up in trees in exposed situations, while *Grammatophyllum scriptum* can be found on Manus Island close to the sea. Jay Phal acknowledges the differing views but choose to consider them separate species for now.

Photo source: <http://www.hawaiiantropicalplants.com>

Grammatophyllum rumphianum Miq. 1869 is another large species from Borneo and Maluku where is found growing as an epiphyte in cool to intermediate conditions. The 1.2 m arched flower raceme has 5-6cm flowers.



Source: <http://www.flickr.com/photos/vsny/200320788/>

Grammatophyllum scriptum [Lindley]Blume 1849, the Written Grammatophyllum is once again, a large to giant sized hot growing epiphyte from Borneo, Lesser Sunda Islands, Moluccas, Philippines, Sulawesi, Solomon Islands, Bismark Archipelago, Papua and New Guinea, Fiji and Santa Cruz Islands. It occurs at low elevations (sea level to 100 m), always close to the coast and epiphytic on tree trunks and branches overhanging beaches, lagoons, and coconut plantations. *Grammatophyllum scriptum* is bright light orchid.

Each pseudobulb has 5 to 8 broad, coriaceous, linear-ligulate, dull green, basally clasping leaves. The upright or arching flower racemes are more than a metre long, and each mature pseudobulb may have more than one flower. This giant of the orchid world has up to 100 waxy flowers per raceme, often with a few imperfect flowers at the base of the raceme.

The Ambon Island native people make a paste from the pseudobulb of *Grammatophyllum scriptum* to heal sores, and others native peoples within this species' range use this plant to cure intestinal ailments and a cleanser for worms. People of the Spice Islands have been known to make a love potion from the seeds of this species. The following photos are the *fma citrinum* Valmayor & D.Tiu in H.L.Valmayor 1984, and normal form.



Photo Source:
<http://mississippigarden.blogspot.com/2008/07/grammatophyllum>

source: <http://orchidsamore.com/tutorials/Grammatophyllum-%20photo%20-%20culture.htm>

A dwarf form, *Grammatophyllum scriptum* var *kiilani* is now available to hobbyists who do not have room for the usual huge sized *Grammatophyllum scriptum*. This miniature flowers with the same colouration as its large parents, but seldom grows to more than 30cm high.

Other varieties and colour forms are:

- *Grammatophyllum scriptum* var. *boweri* (F. Muell.) Schltr. 1912
- *Grammatophyllum scriptum* var. *minahassae* Schltr. 1911
- *Grammatophyllum scriptum* var. *tigrinum* (Lindl.) Holttum 1964



Grammatophyllum scriptum is synonymous with:

- *Grammatophyllum boweri* FvM.,
- *Grammatophyllum guilelmii* Kraenzl. 1894,
- *Grammatophyllum guilielmi-secundi* Krzl. 1894,
- *Grammatophyllum leopardinum* Rchb.f. 1888
- *Grammatophyllum multiflorum* var. *tigrinum* Lindl. 1842, and
- *Grammatophyllum seegerianum* hort. 1896

In an article I found while researching the genus *Grammatophyllum*, the author noted that while Singapore is only a small island, it is the home to the largest orchid plant in the world, *Grammatophyllum speciosum*. Known as the tiger orchid, because of the markings on the flowers that resemble the skin of a tiger, it is extremely rare if not already extinct in the wild in Singapore. However, it can still be found in Indochina, Peninsular Malaysia, Thailand, Borneo, Indonesia, the Philippines and the Pacific Islands (Seidenfaden and Wood 1992).

Grammatophyllum speciosum was last found in the wild in Tuas and Pulau Ubin. As a mature plant might weigh more than a ton, it is surprising that such a large plant could live on the trunk of a tree, and accordingly, the very large specimens are found on large, mature hardwood trees in primary forest. The Singapore Orchid Garden led a venture to re-establish the species in Singapore, and from a self-pollination of *Grammatophyllum speciosum* in the National Orchid Garden, a number of 2 year old seedlings were attached in 1999 to Durian, Rambutan, Mango, Angsana, Tembusu and Rain trees in Pulau Ubin.

Seedlings were also planted on trees in the Gardens, around the Visitor Centre at the Bukit Timah Nature Reserve, and the Orchard Boulevard area in the heart of the city. Factors that appear to have played an important role in the survival of introduced seedlings include the microclimate of the area (relative humidity, for example), texture of bark of the host, presence of other epiphytes and the size of seedlings. For example, seedlings planted in areas with high relative humidity tended to survive better than those in dry areas. In Pulau Ubin, the seedlings established in a damp area inside a secondary forest are much healthier and more vigorous than those growing near the sea where the breeze tends to dry the bark faster. Texture of the bark is important because certain barks tend to retain more moisture. For instance, Rain trees are generally better hosts than Tembusu. Similarly, trees that support more epiphytes tend to be better hosts than those with fewer epiphytes – that is where conditions are suitable for other epiphytes. While I have not visited the Pulau Ubin area, I have seen large plants of *Grammatophyllum scriptum* at the Bukit Timah Nature Reserve and the Singapore Botanic Gardens.

Grammatophyllum stapeliiflorum [Teijsm. & Binn.] J.J.Sm. 1905 is a medium sized, epiphytic, warm to hot growing species from Malaysia, Sumatra, Java, Celebes and the Philippines. Found in rainforests on large mature tree trunks at elevations of 200 to 1000m. it has the typical long racemose inflorescence with waxy, long-lasting flowers. However, unlike others in the genus, the flowers are foul-smelling suggesting pollination by carrion flies or similar.



Source:

http://forum.theorchidsource.com/ubbthreads.php/topics/119964/Grammangis_stapeliiflora_Gramm.html

One of the major problems associated with growing this genus (other than size) is that they seem particularly susceptible to soft rots, generally bought on by loss of active roots. This condition seems to be triggered by over watering and media breakdown, suggesting that if possible (conditions permitting), slab or similar mounting is a better option than potting in media. I have lost several large plants (7-10 pseudobulbs) to soft rots like *erwinia*, *pythium* or *phytophthora* that rapidly progress through the pseudo-bulbs turning them brown. Cutting back the infected bulbs and applying fungicide did not save the plants. Reading several on-line articles, the over-watering problem was confirmed by a number of authors who recommended the use of styrofoam 'peanuts' for the bottom 50% of the pot, with the remainder filled with rocks and large

pieces of bark. Eventually, these plants grew out of the terracotta pot with the living root basket totally above the pot.

So, the secret to success seems to be managing your conditions to ensure that the root basket around the pseudobulbs stays healthy. Allowing the plant to completely dry between waterings, ensuring good fresh air movement and access to oxygen are critical elements of effective plant husbandry for this genus. With good drainage, careful watering and proactive environmental management, we should be able to grow these very desirable species in a shadehouse with winter covering. I have not found them to be particularly susceptible or attractive to the usual insect pests as they are generally very robust plants. However, I have seen Cymbidium Mosaic Virus affected plants in the wild so some care should be taken when sourcing plants.

In summary, given the abundant, attractive flowers, I recommend that you acquire and grow some members of this genus.