

My Green Wet Thumb: *Aponogetons* Yet Again

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Back in October of 2006 I wrote about “Miracle Bulbs” or the *Aponogeton* spp. in general. At that time I briefly touched on the Madagascar lace plant or the *Aponogeton madagascarensis*. As you may recall, I was keeping four different *Aponogeton* spp. at that time, one of them being the above-mentioned Madagascar lace plant. Well, three of the *Aponogeton* spp. flourished in my tanks, but the Madagascar lace plant... well it died. But they still interested me, and after doing some more reading I was interested in trying to grow them once again. At the Durham Region Aquarium Society annual auction in April, I saw a couple of these plants offered for sale and I picked up two beautiful specimens.

I also came across another interesting *Aponogeton* sp. a while back and realized that the plant I found, *Aponogeton undulatus*, combined with the Madagascar lace plant, represent not only the two major “exception to the rule” plants in the *Aponogeton* family (and two of the more interesting examples), but also represent one of the easiest and one of the (reputedly) most difficult plants in that family.

One of the things I found most frustrating when I started working with different species of plants (*Aponogeton* spp., *Echinodorus* spp., *Anubias* spp. and *Cryptocoryne* spp. being my main focus of interest), was that even within a given species, there are no hard and fast rules for care and propagation. Light levels, water chemistry, required nutrients and substrate requirements can all vary. Further, different plants will not only appear different, but can also propagate via different methods. These two plants, *Aponogeton undulatus* and *Aponogeton madagascarensis*, represent some of the more extreme differences to be found within the *Aponogeton* family.

Aponogeton undulatus* / *Aponogeton stachyosporus

Originating in East Asia (India to Indo-China), *Aponogeton undulatus* is similar in appearance to *Aponogeton crispus*. While *A. crispus* has brownish leaves, the leaves of *A. undulatus*, which are also ruffled in appearance, are slightly narrower and usually a richer green in colour. As with almost all *Aponogeton* spp., this plant grows from a tuber. There is some confusion regarding the actual naming of this plant, and you may find it also being sold as *Aponogeton stachyosporus*. *A. stachyosporus* is considered by most to be a smaller version of *A. undulatus*, and they are almost identical except for size. It is reported by some German sources that higher intensity light will lead to more compact growth. Given *A. undulatus*' extreme hardiness and ease of growth, it is probably the best suited of all *Aponogeton* spp. for the beginning aquatic horticulturalist. However, it has not been that popular in the hobby and can be somewhat difficult to find.

The main feature that makes this plant unique among *Aponogeton* spp. is that it seldom flowers, but instead

produces stalks with adventitious plantlets, similar to those of *Echinodorus* spp. (Amazon swords). Over the course of a year, it can produce between five and ten stalks, and each stalk may have up to twelve baby plants. Once the plantlets reach 10cm to 15cm (4” to 6”) in height, they can be removed from the stalk and planted, or the stalk can be “staked” to the substrate (most often recommended by bending a wire into a “U” shape and placing it over the stalk into the gravel) and the plantlets will root on their own with the stalk eventually disintegrating. Also, this plant reportedly does not require the “rest period” that most other *Aponogeton* spp. do, and therefore, as long as sufficient nutrients are made available, will continue to grow in the aquarium over a number of years.

Aponogeton madagascarensis

While the above plant has some unique characteristics, they are not as striking as those of the Madagascar lace plant, *Aponogeton madagascarensis*. Native to Madagascar as the name implies, this plant is one of the most striking available to the aquatic gardener. At one time threatened in the wild due to habitat destruction, this plant is now successfully cultivated and is commonly available albeit more expensive than other *Aponogeton* spp. (\$10.00 - \$16.00 being an average price for a good specimen). Be warned that even if this plant appears exceptional in the source tank, once you place it in yours you will likely experience all the leaves dying back. However, the plant usually quickly rebounds. Both of these that I bought at the auction did completely die back, and are now (one month post-auction) nicely re-growing (at least 10 leaves on each plant), and one has even flowered.

Historically this plant was known as *Aponogeton fenestralis* but the name was changed from the descriptive (“*fenestra*” in Latin means window which perfectly describes the leaves) to the current “*madagascarensis*” reflecting the geographic origin. You may still see it offered for sale as *A. fenestralis*, and may see it offered as *A. madagascarensis*, but will likely find it simply referred to as Madagascar lace plant.

A. madagascarensis has extremely unique leaves. The tissue surrounding the vein structure is completely absent which results in the leaf looking like loosely woven green cloth, or like dark green lace, and it is this unusual leaf design that makes the plant so difficult to successfully propagate. The plant apparently requires higher levels of light, and as any experienced aquarist knows, higher light can lead to algae growth. Any algae growing on these leaves will quickly result in poor growth. To combat this, it is recommended that you have a very efficient “algae crew”, such as Oto cats (*Otocinclus* spp.). In addition to high light, it also requires pristine water quality. Excellent filtration is required to ensure that the water quality is high, and to ensure that there is no debris in the water. Any floating particles will also catch in the open leaves

and this, just like the algae, will result in poor growth. Should you find that debris has settled on the leaf, remove it by agitating the water around the leaf (but not the leaf itself).

Further, and as with most *Aponogeton spp.*, this plant requires excellent fertilization, both for immediate and long term success. The tuber stores nutrients both for immediate growth and for the growth after its "rest period". After its growth cycle, and especially after flowering, this plant needs to hibernate before resuming growth. While some claim to have experienced continual growth, it is recommended that after flowering and the dying back of leaves, the tuber be removed from the substrate and stored at room-temperature for a period of four to six weeks in moist (but not wet) peat moss. After the rest period it can be replanted where, if enough nutrients were stored during the last growth cycle, it will begin to grow anew. It should be noted that while it apparently does flower relatively easily, it is somewhat difficult to get the seeds to propagate.

During the growth cycle, frequent but smaller doses of liquid fertilizer seem to produce positive results. It is also extremely important that the substrate be very nutrient rich. A variety of suggestions on how to do this exist, including planting in vases and keeping the plant potted while in the aquarium. However, if you like to have your plants actually planted (as I do), then it is very important that you ensure that the substrate in general, and especially around the roots of the *A. madagascarensis*, be nutrient rich. The addition of aquarium plant fertilizer spikes or nutrient balls can assist with this.

One very useful suggestion that I have found is to plant some of the smaller *Cryptocoryne spp.* (such as *C. parva*, *C. undulata* or *C. wendtii*) around the base of the *A. madagascarensis*. This reportedly prevents the substrate from becoming anaerobic by enabling water and oxygen through the root zone of the *A. madagascarensis*.

Finally, this plant seems to do best in cooler water. While it is capable of being grown in higher temperatures, the most success is noted when the water ranges from 16°C to 20°C (62°F to 68°F).

Given all of the above; no algae, high light, high fertilization, rich substrate, cooler temperatures, mandatory rest period, difficulty with seed propagation, and higher cost, it is understandable why some recommend that the *A. madagascarensis* should be a solitary plant in a large, specialized aquarium. However, if the requirements are met, this plant develops into a large (reportedly able to fill a third of a 70 gallon aquarium) and beautiful specimen.

Both of these plants are examples of unique members of the *Aponogeton* family. While one is less intensive in relation to its care requirements, they can both be rewarding to successfully grow, and can add not only another dimension to you as a successful aquarium gardener, but to the beauty of your tank as well.



Aponogeton madagascarensis – photo by Annette Omura

Species Profile

Latin Name: *Aponogeton madagascarensis*
Height: 25 – 50 cm (10" – 20")
Width: 25 – 30 cm (10" – 12")
Light: medium – very high
Temperature: 15 – 26°C (59 – 79°F)
pH: 5.5 – 7.5
Hardness: very soft – hard
Growth: fast
Difficulty: difficult
Origins: Africa / Madagascar

Source: various



Aponogeton undulatus – photo by Annette Omura

Species Profile

Latin Name: *Aponogeton undulatus* / *Aponogeton stachyosporus*
Height: 40 – 60 cm (16" – 24")
Width: 20 cm (8")
Light: low - high
Temperature: 22 – 28°C (72 – 82°F)
pH: 6.0 – 8.0
Hardness: soft - hard
Growth: medium
Difficulty: medium
Origins: East Asia

Source: various