



Green Culture Singapore Feature Article for April 2008

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• Text by S. H. Tan •

• Pictures by Cindy Chiang, H. W. Choy & S. H. Tan •

Introduction

You would have heard several of the carnivorous plant (CP) growers in this forum refer to this genus of carnivorous plants affectionately as 'pond scum'. While 'pond scum' rightly refers to filamentous algae, some *Utricularia* species, especially aquatic ones, when not in flower, do resemble 'pond scum'. However, these 'pond scum' do produce flowers that are disproportionately beautiful from their vegetative self and here lies their attraction.

Members of this genus are commonly referred to as Bladderwort. This is the most speciose genus of carnivorous plants with some 214 species according to the expert in *Utricularia*, Peter Taylor. His life work on these 'pond scum' resulted in a large monograph work (724 pp.) published in 1989 by the Royal Botanic Gardens at Kew, which is still the definitive work to consult when you find these plants in your hands. Being such a large and widespread genus, there were a lot of synonyms and mis-identifications in the literature. Peter Taylor reduced some 250 described *Utricularia* species to 214 species, thus earning the collective relief of CP growers as they now have 36 less species to collect and grow. Allen Lowrie, the famous CP grower and CP researcher from Western Australia, described a new species after Peter Taylor, with the predictable name, *Utricularia petertaylorii* in 2002. So, now the number of species stands at 215. As there are so many species in this genus currently, it is doubtful that anyone would be challenging this number any time soon. Any volunteers?

Bladderworts all occur in fresh-waters (let us know if you see one in the sea), wet terrestrial areas, and even in bromeliad cups, and in every continent except Antarctica. CP growers grow bladderworts mainly for their flowers, which are often remarked to resemble miniature orchids. The joy of seeing the flowers is very gratifying after struggling to keep these 'pond scum' alive without the grower going crazy first. Some species are easier to grow in Singapore, but we will examine those issues later.

Bladderworts are highly specialized plants and as such, there is no way to differentiate between leaves, shoots, stems, and roots. However, they do produce stolons from which the 'leaves' and 'roots' are formed. As such, you sometimes see people on forums referring to the 'leaves' as 'lolons' and 'roots' as 'rolons'.

Systematics

Bladderworts belong in the family Lentibulariaceae (bladderwort family). In this family, there are two other carnivorous plants genera viz. *Genlisea* (corkscrew plants) and *Pinguicula* (butterworts).

Two other genera were formerly placed in this family, *Polypompholyx* (pink petticoats or fairy aprons) and *Biovularia*. Peter Taylor (1989) felt that *Polypompholyx* is a subgenus of *Utricularia*, and considered *Biovularia* to be synonymous with *Utricularia*.

The Lentibulariaceae was formerly placed in the Scrophulariales, which has now been merged with Lamiales in the Angiosperm Phylogeny Group system.

Scientific classification

Kingdom: Plantae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Lamiales
Family: Lentibulariaceae

Etymology

Bladderwort refers to the traps of the plant, which are considered to be bladder-like. The generic name *Utricularia* is thus derived from the Latin word *utriculus*, which has several meanings but can be usually taken to mean wine flask or leather bottle.

Modus Operandi

All bladderworts are carnivorous and use their bladder-like traps to catch tiny prey. Some examples of prey items include protozoa and rotifers. In the aquatic environment, the bladders can catch larger prey items, to various degree of success, like *Daphnia* or *Moina* (water fleas), nematodes, fish fry, mosquito larvae and even young tadpoles.

The traps are a very sophisticated piece of equipment that works on a trapdoor principle. There are trigger hairs attached to the opening of the trapdoor. When prey brushes against these trigger hairs, the trapdoor is released and the bladder sucks in the trapdoor, the prey, and along with the water surrounding it. Once the bladder is full of water, the trapdoor closes again. The whole process takes only ten to fifteen thousandths of a second to occur. As such, they are the carnivorous plants that have the fastest reaction time towards capturing of prey. Alas, CP growers hardly ever observe this phenomenon as the traps are so small and are usually underground.

Cultivation

Cultivation of *Utricularia* in Singapore is still in its infancy and confined mainly to hard-core CP growers who are willing to spare some precious space for these vegetative plant bits. In practice, *Utricularia* cultivation is broadly divided into three mainly categories.

1. Aquatic

Several species are aquatic in nature and can be grown in the aquarium or in ponds. Two common species are cultivated in here, *Utricularia gibba* and *U. aurea*. Another species that can occasionally be seen in the aquarium shops is *Utricularia graminifolia*. While it is usually considered to be a terrestrial plant, some aquarists had reported some success in growing this plant emersed.



Above: *Utricularia aurea*. A native aquatic *Utricularia* that does well in an aquarium or a pond. (Photo by Cindy)

2. Terrestrial



Above: *Utricularia sandersonii*. A blue colour form of this native bladderwort from South Africa. This species is well-known for the flowers which resemble the face of a rabbit (Photo by H. W. Choy)

The majority of *Utricularia* species are cultivated like terrestrial plants. Some growers report having good results using a mix of equal parts peat and sand or perlite. Some other growers also had some success in keeping these species undrained containers using only LFS.



Left: *Utricularia livida*. A beautiful terrestrial *Utricularia* with many different colour forms. This is the typical white flower form. (Photo by Cindy)

3. Epiphytic

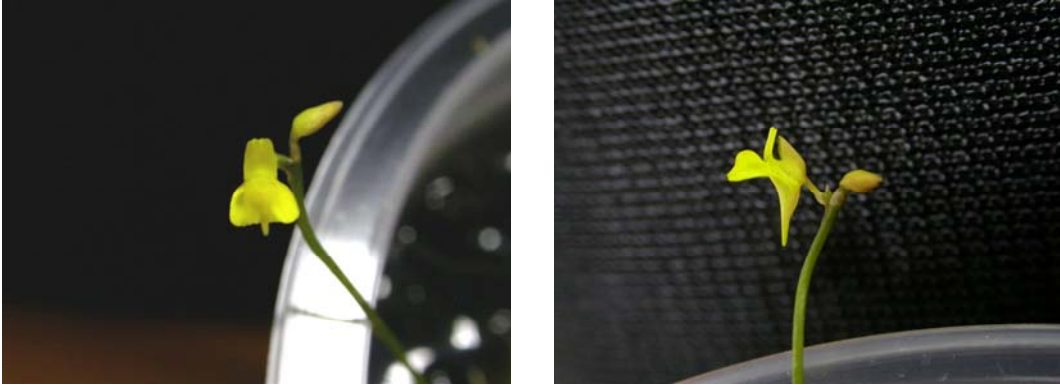
Several highland species from South America are epiphytic. Unlike most epiphytic orchids, these cannot tolerate desiccation and must be kept wet at all times. This group of *Utricularia* is however, difficult to grow in Singapore as they prefer low temperatures and high light conditions. Nevertheless, we still try to grow them. Some growers keep them in a wet-logged slurry of shredded LFS, while other keep them slightly drier in a LFS/perlite mix.



Above: *Utricularia reniformis*, a species apparently endemic to the highlands of Brazil. Grown in a mix of shredded sphagnum moss and perlite (Photo by S. H. Tan)

Native species of *Utricularia*

Actually, according to botanical records, there has been at least seven species of *Utricularia* recorded from Singapore. Five species are thought to be still extant viz. *U. caerulea*, *U. bifida*, *U. aurea*, *U. gibba* and *U. minutissima*. Two species are considered extinct from Singapore: *U. uliginosa* and *U. punctata*.



Above: *Utricularia bifida*. A native *Utricularia* of Singapore.

References

Taylor, P., 1989. The Genus *Utricularia* - A Taxonomic Monograph. Royal Botanic Gardens, London. ISBN 0 947643 72 9

Tan, H. T. W. 1997. A Guide to the Carnivorous Plants of Singapore. Singapore Science Centre. ISBN 9810086296.

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About the Contributor

The author (a.k.a. guqin on the GCS discussion forum) has been growing carnivorous plants since the early part of this century and likes to keep 'odd ball' plants, like *Utricularia*. He also keeps some plants with red flowers to keep family members happy and to prevent them from throwing the containers of 'pond scum' away.

Contributor's Acknowledgements

I would like to thank all the crazy CP growers out there who have shared with me their passion and for seeing the beauty in this neglected group of 'pond scum'. Thanks are due to Cindy for reviewing this article and her comments. Pictures are from the author except for those where credit is given to the photographers.

Feedback for this Article

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<http://www.greenculturesg.com/forum/index.php?showtopic=11953>

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