Utricularia humboldtii Schomb
IN FLOWER

By
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In late 1989, I was fortunate in being able to obtain living material of *Utricularia humboldtii*, the supposed "king of utricularia", with exotic origins in the Venezuelan tepui region, long leaves and huge flowers. There is little information in the literature on successful culture of this species (e. g. R.A.R., 1908). My source gave instructions on his successful vegetative growing of the plant, but his plants had never flowered. In nature, the plants grow in widely varied conditions. They can be found growing in peaty soils of areas of the Gran Sabana, as well as in moss and soils of the tops of tepui. The classical description is of the plants growing in the water filled basins of large bromeliads, particularly Brocchinia spp. other than our *B. reducta*. These bromels get to be 14 feet tall (R.A.R., 1908), and protruding from the tops are the two to three foot peduncles of *U. humboldtii* flowers. These bromel basins hold gallons of water and my attempts with smaller basin bromeliads easily accommodated in the home greenhouse (considerably less than 14 feet!) were rather unsuccessful.

I was able to grow the species in vegetative profusion in several circumstances. One was simply in pots of live sphagnum placed in trays of water; another was brown Canadian peat, also in pots in trays of water. My initial planting multiplied rapidly and I was able to give material to other growers who, however, only had mixed with vegetative growth, and no flowers for any of us.

The mysterious "R. A. R." (1908) alludes to growing the species successfully in "very large tub" with a leaf mold-peat mix. I do not know if this included flowering; it was not specifically mentioned. The only recent incidence of *U.humboldtii* flowering in culture to my knowledge is hearsay of a British grower (name not known to me) who got his plant to flower and carried it into Kew for interested people there to see.

I will refer the reader to Taylor (1989) for descriptive details. My leaves have easily reached the maximum 30 cm length as described. The leaf lamina in culture most often is spathulate in shape, rather than more varied shapes as pictured in Taylor, although these others are occasionally seen in my material. The blade is rather thick and succulent in character. The plant is one of several species in the genus that produces aerial shoots which implant into the nearest pot of something else and promptly take hold. Also, the plant grows so vigorously for me that stolons lead out of pot drainage holes and spread throughout the large water tray. The trays contain pots of other species, so I just let the *humboldtii* merrily grow, the sides of the other pots in the tray supporting the leaves in upright position.

I did not realize that by allowing my plants to run amuck, I had probably unwittingly created my own large bromeliad basins. In April, 1991, I was surveying this mass of vegetation and noting the usual maturing new leaves shooting up, long petioles finally expanding into blades at their tips. Then I noticed that some of the "stalks" looked different, these arising from plants in pots, and the free material out in trays. The stalk had a rather subtle slight widening in the middle, and the bud at the top was much smaller than a leaf. Magnification indeed indicated that these were likely flower buds on their peduncles.

I managed to contain my excitement since the flowers could very easily abort, but they grew on. The tip buds began to swell and then branch into pedicels with larger flat buds of utricularia flowers, only much larger. At last, in May 1991, flowers began opening.

Interestingly, the largest and finest inflorescences were from material "free" in the

water trays among pots of sarracenias and droseras. Some of the flowers of plants confined to pots did indeed abort, although some developed to a lesser extent. My peduncles were far shorter than the maximum 1.3 meter described in nature (Taylor, 1989), the tallest one before first pedicel branching being 31.5 cm, although not unimpressive! The peduncles were 2 mm. thick at the center and each had widely spaced minute scales. Flower numbers are described as 5-16 (Ibid.), and mine was up to three. The largest individual flower measured 5.2 cm across maximum, and all were the typically described mauve with yellow lines on the palate of the lower lip. The flowers had no fragrance and such has not been described.

By pulling down the lower lip a bit, I was able to easily expose the typical lentibulariad stamens and pistil, and easily effect self and cross pollinations without destroying the corolla.

The flowers lasted a good time, even after pollination, for up to ten days after which the corolla was promptly shed disclosing the ovaries swelling into seed capsules which were mature within four weeks in both the self and cross pollinated flowers. The capsules opened transversely while still green and began shedding 1.5 mm flattened peltate seeds, spilling over the lip like slow motion (days) theater popcorn machine. The capsules never opened widely.

Examining the seeds under magnification with back lighting disclosed that the testa was semi-translucent and one could just see minute comma-shaped green embryo within. Magnification also confirmed that these freshly shed seeds were still moist. This concurs with a conversation I had with Warren Stoutamire about 15-20 years ago who told of receiving dry seed from sources in Venezuela which did not germinate. From his examination of the dry seed, he surmised that they could only be viable when fresh and still moist—Once dry, they were essentially dead since they had little to no supporting endosperm.

I sowed fresh seed onto the surface of wet Canadian peat, and within a week, minute plants had germinated. These consisted of a radially growing branched spidery stolon less than 0.1 mm in thickness on the peat surface. A week later, small traps were also seen on the surface, and the stolons began growing down into the peat, still less than threadlike in caliber. Now (August, 1991) I have minute green leaves 2mm. tall!

In conclusion, I should be able to make some recommendations but am not sure what to say. My greenhouse is cooled to 40-45° F. at nights over winter to accommodate sarracenia and other North American CP dormancy, and during the warm season the *U.humboldtii* plants are given full sunlight in our quite warm and humid summer conditions here. I would also encourage you to let your plants "run" for effective vegetative growth—That is, let them spread out into water trays from their primary pots via aerial and stolon shoots. As to what caused them to flower, I have no idea, unless it was the rampant growth since the only flowers that aborted were on plants strictly confined to pots. We will see what they do in the future.

I did not have 1.3 meter peduncles with up to 16 flowers each, but hey!—I saw the king of utricularias flower!

References

R.A.R.*, 1908. *Utricularia humboldtii.* The Gardeners' Chronicle. June 13, pp. 380-381. (* This publication habitually listed its authors by initials and I have no idea who "R.A.R." was.)

Taylor, Peter. 1989. The genus *Utricularia*—A taxonomic monograph. Kew Bulletin Additional Series XIV, Royal Botanic Gardens, Kew. 724 p. (p. 441-443).

A rather busy shot of *U. humboldtii* flowering in a water tray filled with pots of other CP. The spathulate leaves can be seen poking up here and there between pots.

Side view of *U. humboldtii* with second maturing flower bud on another pedicel. Note the small scale on the peduncle.

Front view of flower of *U.humboldtii*. Superficially it appears much like *U. longifolia* except for size (5.2 cm across) and important morphologic features.