Focusing on *Utricularia*—*U. delicatula* and *U. lateriflora*

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This article is one in a sequence highlighting different species of *Utricularia*. My reason for writing the series is to clarify some of the confusion regarding this genus. I also hope to generate more interest in these plants which are usually raised by CPers only out of a sense of obligation to represent the genus in their collections. In this episode I discuss *U. delicatula* and *U. lateriflora*, both from section *Australes* (a section is a group of related species within a genus). I am presenting these two species together because they are extremely similar and this way I can easily stress the differences between them. *Utricularia simplex*, the third species in this small section, can be distinguished from its two cousins by its short scapes (2—5 cm tall) which bear a single flower each. As a CP grower and trader, I have noticed *Australes* species are regularly misidentified in collections. Sometimes they are mistaken for each other. Other times a plant labelled *U. simplex*, *U. delicatula* or *U. lateriflora* is in fact from a completely different section. Even when correctly identified these plants suffer the further insult of usually being misspelled "*deliculata*" and "*laterifolia*." These are some of the simple points of confusion I hope these articles help combat. As in previous installments of this series, I will rely upon my own horticultural experience and Peter Taylor's monograph as my principal sources. Parts of CPN 20:1—2 and my article on *U. calycifida* in CPN 21:1—2 may be helpful if you are uncertain of my botanical terminology.

The leaves of *U. lateriflora* and *U. delicatula* are very small, usually less than 1 mm wide and about 5 mm long. A typical leaf is either strap-shaped (often the case for *U. delicatula*) or narrowly obovate. What appear to be several leaves may only be one, since a leaf growing from a stolon may fork a few times before emerging at the soil surface. In fact, the majority of each leaf is underground, and Taylor states the length of a complete leaf can be up to 5 cm. Each leaf of *U. lateriflora* has a single faint central nerve, while *U. delicatula* can have a few more branching to the leaf margins. The underground stolons are threadlike and very delicate. The bladders are small, 0.5—0.7 mm long, and rare on my plants. Unlike those of many *Utricularia*, the bladders of these species do not have a pair of long bristles near the trap aperture. Instead, each trap has a single pointed appendage that curves close against the bladder opening.

The peduncles of both species (Figure 1) are wiry and thin (0.3—0.8 mm diameter). If you examine them closely you will see they are angled or polygonal in cross section instead of round. At maturity they average 3—15 cm long, but those my *U. lateriflora* plants produce are up to 35 cm long. Several ovate scales (0.3—0.4 mm long) are usually formed, and are crowded near the ground. (I will discuss the terms "scales," "bracts," and "bracteoles" below.) Each flower is attached to the peduncle by a pedicel approximately 1 mm long and flattened in cross section (it is wider than it is tall). With such short pedicels the flowers appear to be fastened directly to the peduncle axis (Figure 2). This is probably the origin of the name *lateriflora*—"lateral flowers" or "flowers to the side." The name *delicatula* means "small and pleasing" or "delicate." The ovate bract at the base of each pedicel is about 1 mm long, and is flanked by a pair of narrower but longer bracteoles. While *U. delicatula* usually produces 1—4 flowers

on a peduncle and *U. lateriflora* 1—10, there can be more. I have noticed *U. lateriflora* often produces pairs of flowers very near each other on the peduncle axis (i.e. within 5 mm), but not close enough to be considered "opposite" (Figure 1a).

The perianths (calyx lobes and corolla) of both species are practically identical, especially compared to variations within the species and those due to differing cultural conditions. Both calyx lobes are about 2 mm long, convex, and round or elliptical. The upper lobe is smaller and is often mildly pointed, while the tip of the lower lobe can be slightly notched (emarginate). The upper corolla lip is twice as long as the upper calyx lobe. Narrowest where it emerges from under the upper calyx, it then slowly widens to a usually emarginate tip. The lower lip is much larger than the upper, although at 5—10 mm long it is not gigantic. If flattened, the lower lip's outline would be approximately circular—*U. delicatula* can be slightly three lobed while *U. lateriflora* slightly two lobed. The spur is approximately parallel to and about as long as the lower lip (that of *U. delicatula* sometimes shorter, of *U. lateriflora* sometimes longer). It is usually oval in cross-section (wider than tall) and is clearly bifid or forked.

Both upper and lower lips are shades of lilac or violet. Most lilac or purple flowered *Utricularia* species are prone to colour variations in plant to plant, and these species are no exceptions. These species have no inflated palate bulge—instead there is a also a small yellow spot in its place. Sometimes the spot is white, sometimes yellow edged in white. The colour of the spur is usually the same as the corolla lips, only a bit more pale.

How do you distinguish between *U. delicatula* and *U. lateriflora*? The differences I described above are too variable and unreliable for the job. But you can safely depend upon some lesser plant organs—scales, bracts, and bracteoles. And what are those? A scale is a small leaflike structure found on many plants, like the triangular growths on a stalk of asparagus. Many *Utricularia* species have scales, and by Taylor's definition are always found on the peduncle somewhere between the ground and the lowermost flower. Both *U. delicatula* and *U. lateriflora* normally bear scales (Figure 1c,d). Bracts look much like scales, but bracts occur wherever a flower's pedicel attaches to the peduncle. Stated another way, flower buds are produced in the bract axil. Sometimes a flower bud does not continue its growth beyond very early stages. When this happens the dormant or aborted flower bud may be so small it remains hidden by the bract, and you may mistake its bract for a scale (Figure 1b). But remember, scales never occur on a *Utricularia* inflorescence above the lowermost flower. Taylor considers scales to be sterile (i.e. not associated with floral parts) bracts. The bracts of many species (as in section *Australes*) are flanked by a pair of bracteoles. Bracteoles are usually narrower than bracts but are otherwise similar. The evolutionary forces of nature are thrifty, and organs are rarely retained if they are not useful. So what purpose could scales, bracts, and bracteoles have? I recently severed the tip of a *U. prehensilis* scape by accident, and in a few weeks a new scape branch grew from behind a peduncle scale. Oddly, a few rhizoids (the closest *Utricularia* get to having roots) also grew from this scale. So at least in this case the scale was protecting a region of meristem tissue. This tissue was activated into growth by the damage the scape suffered, and the plant flowered successfully. Similarly, I think a function of bracts and bracteoles is to protect embryonic flower buds from damage.

Armed with this information we can examine the differences between *U. lateriflora* and *U. delicatula*. The bracts on *U. delicatula* are almost always found at the base of a fully developed flower—very rarely do they cover dormant buds. In contrast, only half or even fewer of the bracts on *U. lateriflora* are at the base of fully developed

flowers, the others subtend forever dormant flower buds (Figure 1). The presence of non-flowering bracts increases the spacing between flowers, giving *U. lateriflora* a sparser inflorescence. There is a second way to key out these two species based on how the seed capsules open at maturity. A seed capsule of *U. delicatula* splits along a single line on its underside, from capsule base to tip. A capsule of *U. lateriflora* develops two splits on opposite sides of the capsules. I prefer the bract method of keying between the species because it can be done at a glance.

There. That is all. The presence of dormant flowers and a detail in capsule dehiscence. You may rightly wonder whether such small differences really warrant a division at the species level. After all, *Sarracenia flava* occurs in many forms—why not classify these as separate species or subspecies? One reason is there are intermediate specimens for all those varieties. Also important, the sizes of the populations of the intermediate specimens are not tiny compared to those of the varieties. So the *S. flava* forms are not really segregated into separate and uniform populations (as Paul McMillan has argued, *S. flava 'rugelii'* may be an exception). The case of *U. lateriflora* and *U. delicatula* is difficult, and in the past Taylor believed them both to be components of the same species. But the differences between *U. lateriflora* and *U. delicatula*, although small, are consistent and there are few specimens of plants with intermediate characters, so in his monograph he concluded the split is justified. Perhaps it is best to defer to the botanists familiar with the genus and who have seen all the evidence. But botany, like the other sciences, is constantly refining and evolving in its conclusions, and this issue is open to everyone's ruminations. Maybe we should take a vote!

The natural range *U. lateriflora* is large—it is found throughout much of southeast Australia at low elevation, including New South Wales, Queensland (south of 25 degrees S latitude), South Australia, Tasmania, and Victoria. In this range it grows in wet sand or peat soils. Herbarium records show it flowering every month of the year. The specimens of *U. lateriflora* that most resemble *U. delicatula* are found in Tasmania. (Allen Lowrie distributes seed of a Tasmanian plant he calls *U. lateriflora* 'Single large mauve flower'—it will be interesting to see how these peculiar specimens fit into the bigger picture of the species.) East of this range, separated by more than two thousand kilometers of Tasman Sea, is the much smaller range of *U. delicatula*. It is restricted to wetlands in the northern half of New Zealand's North Island, where it has been collected in flower during the southern hemisphere summer (November—February).

The plants are slow growers but respond well to standard tropical terrestrial *Utricularia* culture (see my previous *"Focusing on U. uniflora"* article for details). There are apparently some cultural conditions which must be met for the plant to flower. I don't know what they are, but they are fortunately satisfied by accident a few times each year under normal culture. When this happens every pot in the growing area will simultaneously produce scapes. A flowering phase usually begins in the spring and can last several months. When I started to grow these plants I was concerned about what size pot I should use and how deep of a water table was necessary because I knew the stolons of these species probe far underground. After experimentation I discovered they species require no more room than other small *Utricularia*—a 5 cm pot sitting in 1—4 cm of water is just fine. If you overturn a pot of established plants and carefully knock the soil out you can inspect the minute threadlike stolons and long leaves for yourself. I can appreciate how difficult it must be for botanists to collect this plant in the wild for their presses! In time a colony of plants will completely

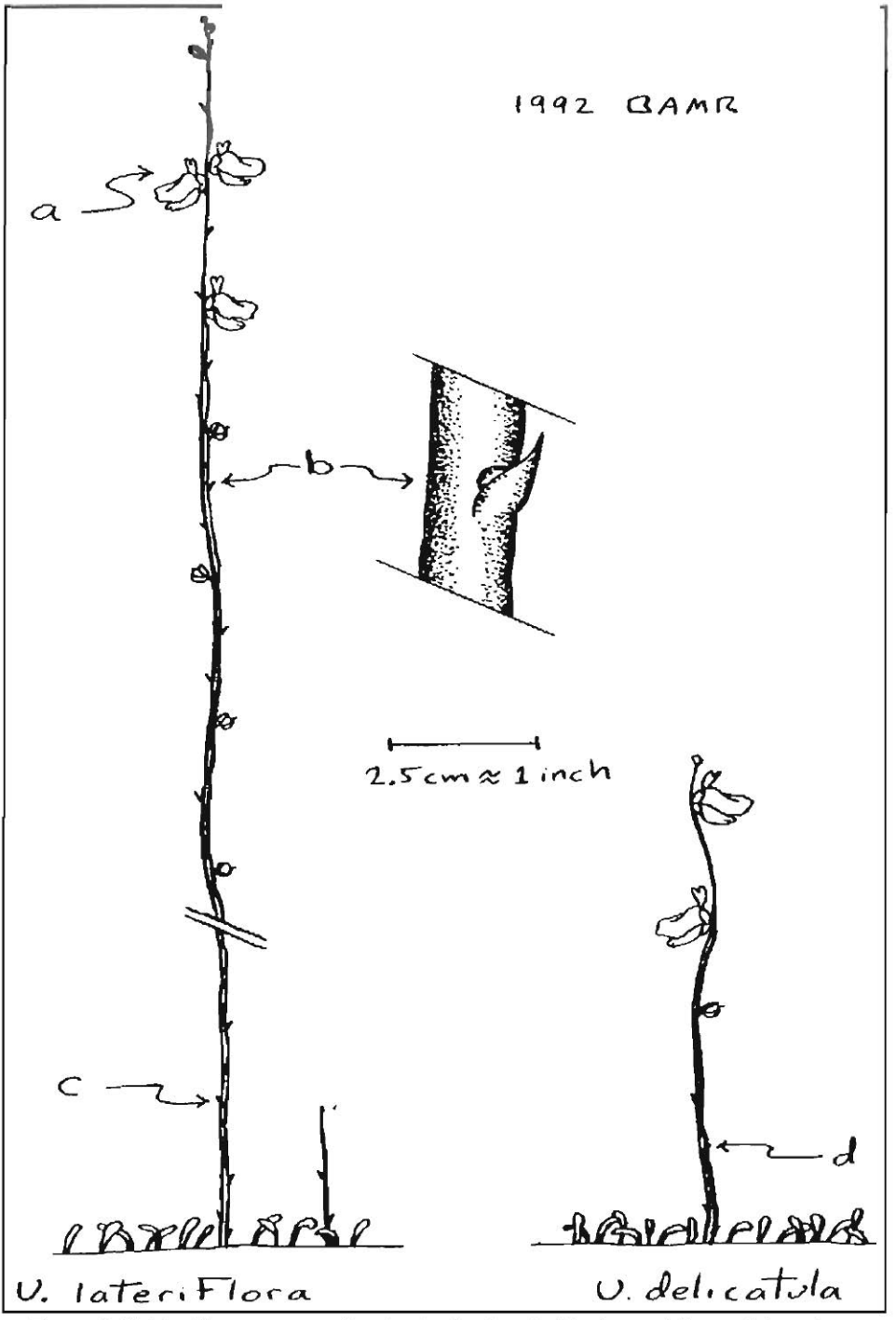

Figure 1 *U. lateriflora*: a—near floral pair, b—bract with dormant flower (also shown highly magnified), c—scales; *U. delicatula*: d—scales.

fill its pot with leaves. When this happens flowering often decreases or stops, so I carefully cut out a deep hunk of soil and inoculate a fresh pot of growing medium with it—the rest goes in the mail to other growers. Seed from my plants has never germinated.

These plants are certainly not very impressive in or out of flower but their delicate beauty makes them well worth growing. I group my diminutive *Utricularia* species in a single tray so while individually they are easily overlooked, together there is always at least one plant flowering.

I would like to thank Peter Taylor and Don Schnell for previewing this and the other installments of this series, and for their helpful comments and criticisms. However, any inaccuracies or opinions expressed in these articles are fully my own.

Figure 2 *U. lateriflora*: A near floral pair. Even the bracteoles can be longer than the pedicels of *Australes* species.

Focusing on U. gibba—The "U" stands for Ubiquitous!

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A reason I enjoy growing *Utricularia* is that so many are extremely tolerant of differing cultural conditions and forgiving of mistakes and neglect. But ask me about growing aquatic species and I become edgy. After a few months or years, whatever aquatics I try to grow invariably wane and finally die. But there is a class of aquatic *Utricularia* which are easy to grow and are not so sensitive—the affixed aquatics. While these plants grow in water, they must be in contact with a substrate of soil to prosper. The lovely species
U. gibba is such a plant.

The genus *Utricularia* is broken into two subgenera, *Polypompholyx* and *Utricularia*. In the latter subgenus are thirty-three sections and the largest (section *Utricularia*) contains thirty-four species including *U. gibba*. This section contains most of the familiar yellow flowered aquatics such as *U. macrorhiza*, *U. vulgaris*, and *U. australis*. Fortunately *U. gibba* is easily distinguished from most of these other species so identifying it is rarely a problem. I'll start this discussion of *U. gibba* by describing its form and habit so you can identify it yourself. Then I'll summarize how *U. gibba* has been confused with other plants in the past and lastly I'll include cultural tips. Describing any plant requires the use of some jargon and if you are confused by my usage refer to my *U. calycifida* article (CPN 21:1) and parts of CPN 20:1-2.