Observed Variation in *Drosera Auriculata and Drosera Peltata*

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This article is based on my own observations of plants of *Drosera auriculata* and *D. peltata* in the wild and in cultivation; in all cases the geographical origin of the plant is known and taken into account. The majority of the variation relates to plant colour and stature. I observed no differences in flower structure of both species and I believe that I am simply documenting (some) of the variation within both wide-ranging species.

Variation in Dro*sera auriculata*

The main variation in *D. auriculata* concerns the presence, or absence, of a basal rosette, the thickness, and to a lesser extent, height of stem and colour of the flowering parts.

At home, in Mulgoa, NSW, large colonies of this species occur. The majority of plants commence above-ground growth in March (a trend shared with most other tuberous *Drosera* species,); however, some plants can usually be found in active growth in December if appreciable summer rain has fallen. These summer growers often flower in March when they are producing a new stem in-phase with the rest of the plants.

This species typically occurs as colonies of between ten to at least one thousand plants. The dominant morphology is that of a weak, slender, trailing/scrambling stem to 50 cm tall. The plants either produce a sparse basal rosette of 3-10 leaves followed by a stem, or boycott the rosette stage and immediately produce a stem where the lower leaves are reduced to stipules. At first self-supporting, the stem begins to trail on the ground or over adjacent vegetation when it reaches 10-15 cm in height. In some instances, where the plant has produced a number of daughter tubers, the stems grow in very close proximity and are able to support each other by intermeshing leaves and can remain upright to heights of up to 40 cm before they submit to gravity.

Buds are produced from June and flowering commences later that month, continuing into October, or even November, dependent upon when the soil begins to dry out. Petal colour is usually white although a few light-pink petalled forms occur. The ovary is green, styles and filaments are white and the pollen is cream to pale yellow. The flowers are open on sunny days from mid-morning to mid-afternoon. Mass-flowering seldom occurs with this form and is generally a very staggered affair with rarely more than a dozen flowers open at any one time, even in the largest colony.

Another form of this species grows at Mulgoa which has a very well-developed basal rosette and produces stem growth from late June/early July, at the same time as local *D. peltata* plants. The stem reaches between 8 and 30 cm tall, with plants over 15 cm tall requiring support from surrounding herbage. The plants flower from October until the soil dries out, the petals are pink in bud, open white and dark pink when withered. This form often occurs in small groups amongst the other form of *D. auriculata* at Mulgoa.

An attractive rosette-forming, mid-pink petalled form occurs in the upper Blue Mountains, and has also been found near Kandos to the north-west. Above ground growth appears in March, culminating in a well developed (8 to 15 leaf) basal rosette

by June when stem growth commences. The stem is thick (to 2 mm diameter) and self-supporting, reaching 8-50 cm in height. In cultivated plants, flower buds are formed from August and are open from September to October. In nature (at higher elevations) buds are produced later and flowers are open from late October to early December. The petals are a substantial shade of pink and are slightly larger (1 cm diameter) than those of the white-petalled forms (8 to 9 mm diameter). The ovary is green, the style and filaments are white and the pollen is cream/pale lemon in colour.

I have observed pink-petalled plants at Wilson's Promontory, Victoria, and in Tasmania. The Victorian plants were observed beside the path to Mt. Oberon on Dec. 30, 1986. The plants grew to 30 cm tall and were in stages of growth between flowering and full dormancy. The basal rosettes had withered at the time so I am not sure if this form is exactly the same as the Blue Mountains form. A very similar form is nicely illustrated in Marcel Lecoufle's book, on pages 74 and 75, labelled as *D. peltata.*

In 1991, I observed similar plants in western Tasmania and at Mt. Nelson, Hobart. The western Tasmanian plants grew in well-drained soil and flowered from early February to late March. In sheltered locations these stems persist into mid-winter and have new rosettes forming in June. In open situations the plants produced a basal rosette to 2 cm diameter, but where the surrounding herbage was too dense, the plants immediately produced a stem and the leaves on the lower 10 cm were reduced to stipules. Plants grow to 40 cm tall, often producing two or three branches which terminate in an inflorescence.

Colourwise, the form develops a tomato-red main stem, pedicel, sepals and lamina. The petioles of the cauline leaves are green with a red end at the base of the lamina. The tubers are found to be white. A similar form grows at Mt. Nelson in a number of locations in dry Eucalypt forest. A sparse basal rosette emerges in March, pink-petalled flowers are produced from September into late November when the soil begins to dry out. The tubers have a red surface.

An unusual form occurs at Richmond, N.S.W., growing with *D. burmanni.* I have observed this form only twice. It grows in sandy soil, in light shade and does not form a basal rosette and grows to 10 to 15 cm tall. Other differences include the all-green colour of the petiole and the flower colour. The petals, filaments, stigma and style segments are white, the pollen is yellow and the ovary and style are orange/brown. Thus the flower looks very much like that of *D. peltata"* Western Australian" form as shown on page 91 of Allen Lowrie's first volume (1987).

Variation in Drosera peltata

This species appears to have better defined variations than *D. auriculata* and lacks intermediate forms; it also adheres more rigidly to a growth cycle of March emergence and spring dormancy following seed-set or the onset of dry weather (with the notable exception of *D. peltata ssp. gracilis* in the wild). In general, this species is found in heavier soils than *D. auriculata* and rarely do both species occur together.

Green rosette/pink-petalled form

This form grows at my home and has been observed at Castlereagh (west of Sydney) and near Kandos, N.S.W. It forms a substantial rosette with up to 30 golden-green leaves between March and June/July when stem growth commences. The stem grows to between 10 and 50 cm tall and is self-supporting for all but the tallest of plants. As the stem ages, it changes colour from golden green to red, from the base up. Colonies of this form obtain a distinctive red colour due to the reddening of the stems; the basal rosette, however, remains golden green. Plants collected by a friend at Orange, N.S.W., retain the golden-green colour over the entire plant, save for the retentive glands. The latter form appear to be closest to those plants described by Bruce Pierson (1990).

Red-rosette/white-petalled form

I have observed this form growing in the upper Blue mountains and also in very wet soil near home (growing with D. *spathulata* and *U. lateriflora*). It is a less robust form than that described above and produces a self-supporting stem to 15-20 cm tall. The sparse basal rosette is fully red in colour, even in shade-grown plants. The rosette grows from March with stem growth commencing in June. As the stem grows it changes in colour from bronze to dark green, as do the petioles, and the basal rosette withers away. The cauline leaves remain green with red retentive glands. The olive -green coloured flower buds emerge from August and the flowers are open from September to early November. At higher altitudes flowers are open from October to early December. Colourwise, the petals, filaments and styles are white, the pollen is cream/pale lemon and the ovary is green.

***D. peltata* "Western Australian form"**

This form is well described in "Carnivorous Plants of Australia-Vol One" by Allen Lowrie (1987). It differs from the two forms described above. The salient differences are the uniform bronze-red colour of the entire plant, and the white petals, filaments, stigmas and style segments, bronze ovary and style, and orange pollen.

D. peltata* ? *ssp. gracilis

This diminutive form was encountered in western Tasmania and is reported from other cold temperate locations in Australia (Erickson, 1978). Unlike the other *D. peltata* forms described above, it follows a pattern of summer growth and winter dormancy in the wild (however in cultivation in mild temperate climates, it changes over to summer dormancy with Autumn emergence).

In the wild, this form has a well-developed basal rosette to 2 cm diameter. The single slender stem grows to 25 cm tall and supports a very few cauline leaves. It is surmounted by an inflorescence, the length of which often exceeds the length of the leaf-bearing stem. The white-petalled flowers were observed from late January to late March, most of which set seed. Overall, the plants are a tomato red in colour.

Plants of this form were found in permanently water-logged peaty soil. The red tuber was found between 2 and 5 cm below the soil surface. I could find no evidence for the presence of a stoloniferous root system, a diagnostic feature of *D. peltata ssp. gracilis* (A. Lowrie, 1991, pers. comm.). However, the slender, diminutive nature, summer growth pattern with autumn flowering of the plants I observed are all consistent with this subspecies.

In summary, both *D. peltata* and *D. auriculata* resemble each other and can be difficult to tell apart when flowering parts are absent. The presence or absence of a basal rosette is by itself an insufficient means of distinguishing between species, but it can be useful in conjunction with observations of other features. From my observations, both species may be told apart by the colour of the petiole of the cauline leaves. In most forms of *D. auriculata*, the petiole is green with 2 or 3 mm of red or pale green colour adjacent to the base of the lamina. Whereas in *D. peltata* there is more variability. In the "Green-rosette/pink-petalled form" the cauline petioles are all golden-green. However, in the "red-rosette/white-petal form" the petiole colour is very similar colourwise to most *D. auriculata* forms, but the fully red rosette is not shared with D. *auriculata*. The uniform colour and totally separate range of *D. peltata* "Western Australian form" makes it easily recognizable.

The habitat of the species and timing of growth can be a useful guide in determining their identity. *Drosera auriculata* is a much more opportunistic grower than *D. peltata*, and generally prefers better drained soils. Both species rarely grow

together. *Drosera auriculata* has been found in growth and flower at all times throughout the year, dependent upon location. *Drosera peltata* follows a more rigid annual growth pattern; but even so, the various forms ensure that this species flowers through most of the year within its range. From my observations to date, the flower structure of all forms of both species do not differ. Only the colour of the flower components differ. Thus we are simply dealing with some of the variation in two distinct species.

Hybridization has been suggested as a possible explanation for the observed variation of both species (Pierson, 1990; R. Tilbrooke, 1990, pers. comm.). I have yet to find support for this hypothesis however, and further work is required in this area.

The purpose of this article was merely to give an account of some of the variation encountered in a small part of the range of both species. It would be useful if this work could be carried out through the rest of their range.

References

Erickson, Rica 1978 *Plants of Prey.* University of Western Australia Press, Nedlands.
Lecoufle, Marcel 1990. *Carnivorous Plants: Care and Cultivation.* Blandford, London.
Lowrie, Allen 1987. *Carnivorous Plants of Australia: Volume One.* University of Western Australia Press, Nedlands.

Pierson, Bruce. 1990. "News and Views." *Carnivorous Plant Newsletter* 19:(Mar) 8-9.

Tilbrooke, Richard. 1990. Personal Communications.

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Another Method for Growing *Darlingtonia*

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After talking to several people, all growers of the "cobra lily", I noticed that for some people it is really easy, "Just set it in a tray of water and treat it like a *Sarracenia*" and for others like me, it isn't. It's daily waterings, icing, finding that "just right" spot, and then losing it when I go away for any length of time occurred too often. Or at least it used to be.

I lost two plants in a freeze last winter and started to ask myself if perhaps I should give up on this plant. Then , I found a couple of really nice specimens that were irresistible and decided that I was not going to lose any more of these plants. The following method was worked out very early last year and tested throughout the summer, and the plants are alive now and growing.

To start with, I use an aquarium (dimensions 20" x 20" x 12") with an under-gravel filter system installed. Three air lines are placed so that one is in the middle, between the filter plates, and the other two that drive the filter system are in the corners. I use a Whisper 500 air pump to supply the air, but any large air pump will do.

Over the gravel layer, I add a two inch layer of coarsely shredded live sphagnum moss. A second layer of unshredded live sphagnum is added to fill the aquarium to about the two-thirds level. It is in this moss bed that the plants are placed with no attempt to remove any compost clinging to the roots. Next, water is added until it is about one inch below the top of the moss. An aquarium thermometer is also added,