

HIGHLIGHTS OF A TRIP TO WESTERN AUSTRALIA

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Introduction

From late September 1999 I enjoyed a three-week trip to southwestern Western Australia in which I saw fifty-five taxa of carnivorous plants in the wild, including species I had not seen before. The following is an account of some of the species and sites observed.

My travels took me initially to carnivorous plants in and around Perth, including the woodland in Kings Park in the centre of the city where I was fortuitously in time for the annual spring show. From here I headed south to Harvey, to meet up with Phill Mann and another visiting carnivorous plant enthusiast, Tuan Nguyen from the USA. We did an excellent lot of day trips and then a longer expedition to the south coast, via Cranbrook to the vicinity of Denmark. After a few days I returned to Perth then hired a car to continue my travels along the south coast as far east as Ravensthorpe.

It was an excellent time of year to see carnivorous plants in the southwestern parts of Western Australia, for many species were in flower. In general tuberous *Drosera* were at their best. In particular, the fan-leaved and rainbow sundews were in full growth and often flowering. Many of the rosetted tuberous *Drosera* were beginning to die down. The pygmy species were producing large rosettes, but few were in flower or bud. *Drosera glanduligera* was ubiquitous and commonly in flower (Figure 1). Few other carnivorous plants were seen but *Utricularia multifida* was observed flowering in many areas, and we were treated to a healthy stand of *Cephalotus follicularis*.

During spring this part of the continent experiences the passage of two distinct air masses, which influence the growth and flowering of carnivorous and other plants. Cool, humid subantarctic air masses emanate from the southern Indian Ocean and move from west to east. They bring much of the rainfall to this region, particularly in the cooler months. Warm, dry air from the central part of the continent also moves over this region, and is characterised by low humidity and clear skies. These two types of air masses alternate in their passage. Subantarctic air moving into the region has a well-defined leading edge, marked by a cold front, which brings rain, a drop in temperature and, on either side of its passage, an increase in general wind speeds. Ahead of a cold front, warm northerly winds develop with clear skies. These stimulate many flowers of a range of *Drosera* and associated orchids to open; probably an evolutionary response to capitalise on enhanced insect activity during warm conditions. After the cold front's passage the flowers of many sundews remain closed until a critical air temperature is again reached. I was fortunate to see some sites when warm, northerly winds were blowing, so that the flowers of most species were open.

Summary of Observations of Key Species

Cephalotus follicularis: The Albany Pitcher plant was seen at a peat swamp near the town of Denmark. The site had been burnt the summer before last, which had not only removed the above ground plant mass but had burnt holes into the peat; the fire smouldered for weeks. The signs of the fire were still visible, with

standing dead shrubs still present and a healthy flush of saplings now at their base. The holes in the peat had filled with water and were variably filled with large, well-coloured clumps of *Cephalotus*, with some pitchers almost fully underwater; the plants had grown back strongly from unburnt roots. Individual clumps measured up to 60 cm across and had a mass of pitchers. These traps were up to 6 cm long and generally well coloured, and the few that were opened invariably contained the larvae of a dipteran. Emerging scapes were seen at the centre of many rosettes.

Drosera hamiltonii: The one site of this plant we visited had been disturbed by the construction of a fence. This had led to the removal of all plants beside the road. However, several clumps of *D. hamiltonii* were found, probably emerging from undisturbed roots. The rosettes were growing in open, sunny conditions and were up to 5 cm across. Three rosettes had scapes just clearing the unfolding leaves. This species had actually benefited from the recent clearing.

Drosera bicolor: Small colonies of this delightful species were seen at the type location. The species grows in deep white quartz sand, which supports a low open shrub land. This small erect tuberous *Drosera* grew in slight depressions and was in flower at the time of my visit. The flowers showed the distinctive red dot at the base of each otherwise white petal, and the very short petiole of the lower stem leaves was clearly visible. Heavily bedewed imbricate rosettes of *Drosera zonaria* also grew nearby in this habitat, but were not seen with *D. bicolor*.

Drosera erythrogyna: This graceful species was seen at a number of sites, growing close to *Cephalotus* and *D. hamiltonii*. It is by far the tallest of any sundew and a spectacular plant on the edge of the *Cephalotus* site approached 3 metres in height. This massive, and probably quite old plant had twelve branches in the upper half and was estimated to have over 1000 leaves and 400 flower buds. The open flowers have a delightful fragrance, reminiscent of a carnation. One inflorescence on a plant near Albany was also found to be the home for a green flower spider, which waited in ambush for prey on the underside of a petal. A similar flower spider was seen in the inflorescence of a *D. macrantha* subsp. *macrantha* plant further inland.

Drosera gigantea subsp. *gigantea*: A large and locally abundant erect sundew, *D. gigantea* is aptly named. Tuan and I were treated to a superb site for this species near Harvey where this species formed a dense sward on a seepage slope on a granitic hill. The plants were up to 60 cm tall and varied in colour from green to red. Many plants were in flower and, as the flowers were closing at the end of the day, it was seen that several blooms were the nightly homes of a small bee. The plants at this site glowed when backlit by the late afternoon sun, as did the accompanying *D. stolonifera* subsp. *stolonifera* plants. Some variation was seen in this species, with large flowered plants found near Cranbrook, and very red plants at a site near Perth.

Drosera huegelii: In general only a few plants of *D. huegelii* were ever seen at one site, but they were encountered in many locations from near Bunbury to Albany. Plants were seen in bud, flower and fruit and varied greatly in stature. At one notable location, on the summit plateau of Bluff Knoll in the Stirling Range, grows a population of short stemmed plants, up to 8 cm tall. Growing in peaty sand at the base of low shrubs, they have normal sized flowers—up to 2 cm across—which look disproportionately large for the plant. Taller plants, to 40 cm tall, occur at the base of the mountain. The summit plateau reaches 1200 m elevation and is subject to occasional winter snowfall and has more frosts than the surrounding country. It is not yet known whether its short stature is due to genetic or environmental factors, and requires more study.



Figure 1: *Drosera glanduligera*.



Figure 2: *D. menziesii* subsp. *menziesii* shown in flower with the yellow-flowered *D. subhirtella*, near Moodiarup.



Figure 3: *Drosera ramellosa*.



Figure 4: *Drosera barbigera*.

Drosera microphylla: This is an aptly named tuberous species; it has small cauline leaves on an erect stem to 40 cm tall. The red-petalled form of the species near Perth is a rare plant to see flowering for few plants produce flowers, and those that do rarely open them. I was fortunate indeed to see this species flowering at Mark Stuart's place in the hills east of Perth. Here a small group of plants grew in a band across the slope of a hill in gravelly laterite soil. My visit coincided with the passage of a warm, northerly air mass ahead of a cold front, which induced many of the spectacular blooms to open. The glossy olive green sepals and vibrant red petals reflex strongly to expose the crown of stigmas and ring of erect, red stamens with conspicuous yellow pollen.

Drosera menziesii subsp. *menziesii* (Figure 2): A few different flower forms of *D. menziesii* subsp. *menziesii* were seen during my travels. Plants on the coastal plain, growing in deep quartz sand had pale pink-petalled flowers, whilst those on the Darling Range and further inland on wet rock slopes and in sandy clay soil generally had darker pink blooms. At one site near Cranbrook grew a form with large vibrant orange-petalled flowers, which, in common with all other variants, were deliciously sweetly scented.

Drosera stricticaulis: Yellow green plants of this species were seen at a number of sites, the majority of which were still in vegetative growth. They grew primarily in the wettest conditions, in seasonally sodden clay loam, often in the company of *D. gigantea*, *D. neesii* subsp. *neesii* and *U. multifida*. This species strongly resembles *D. macrantha* subsp. *macrantha* morphologically but has an erect, self-supporting stem. Its pink flowers are sweetly scented.

Drosera ramellosa (Figure 3): This fan-leaved species was seen growing in abundance along a creek near Cranbrook. It was the most common herb on the creek bank, sometimes growing in dense masses. The basal rosettes were well formed but the ascending stems were only just becoming visible. Many of the plants were in flower and had small, very reflective white-petalled flowers. In wet clay soil beside the creek a few emerging plants of *D. gigantea* and *D. stricticaulis* were also seen.

D. stolonifera subsp. *compacta*: A few populations were observed. Those near Cranbrook and north of the Stirling Range consisted of plants to 5 cm across and high, some of which were in flower. The population seen south of the Stirling Range consisted of much smaller plants, which were similar in stature to *D. stolonifera* subsp. *monticola*, which is endemic to the highest peaks of the Stirling Range.

Drosera stolonifera subsp. *stolonifera*: This robust species grows in abundance in several sites to the south east of Perth. Some notable sites, in the Darling Range consisted of very open woodlands on thin soil on the slopes of granitic rock outcrop. In this environment *D. stolonifera* subsp. *stolonifera* was the dominant herb in terms of size, abundance and visibility. Multi-stemmed plants grew to 30 cm tall and frequently had open white-petalled flowers on inflorescences emerging from the centre of the small basal rosette and, less commonly, at the apex of ascending branches. The flowers were sweetly scented and most were pollinated, as evidenced by the abundance of seed being set. This species was an efficient carnivore in terms of prey caught, and in one notable plant, a dragonfly with a body 5 cm long had been caught by many leaves after apparently attempting to fly between stems.

Drosera erythrorhiza subsp. *erythrorhiza*: Several populations of this rosetted plant were seen, generally in deep quartz sand soil. This species was nearing the end

of its growing cycle and many populations consisted of the dying remains of rosettes. However, at a site near Cranbrook, where the species was seen growing in laterite-derived soil, the plants were still photosynthesising and trapping insects but the rosettes were developing increasing levels of red pigmentation, and formed a conspicuous colony of orange-red rosettes up to 6 cm across.

Drosera erythrorhiza subsp. *collina*: This is a variable taxon with respect to plant size and leaf colour. At many sites it was possible to see small rosettes, to 6 cm across, with red-edged green leaves, which appeared to grade into *D. erythrorhiza* subsp. *squamosa*. Larger (up to 12 cm across), fully bedewed rosettes, varied in colour from green, to orange, to reddish. It was seen at many locations in lateritic gravel and sandy clay soils, including several places on the south coast from the Stirling Range and Albany and as far east as Bremer Bay.

Drosera barbigera (Figure 4): Tuan and I had the pleasure of visiting a recently discovered location of the majestic *D. barbigera*. This robust pygmy sundew grew in pebbly laterite soil and had semi-erect rosettes to 4 cm across. The plants were just coming into flower and we arrived in time to see the buds open to reveal a black-centred orange flower 2.5 cm across. The plants were glorious to behold. The population at this site has been studied by Phill and the plants are smaller than those in other parts of its range

Drosera lasiantha: I was privileged to visit the type location of *D. lasiantha*, a hillslope in the Porongorup Range on the south coast. This site consists of a natural clearing in the Eucalypt woodland, where a diverse shrubland predominates in soil too shallow to support trees. This attractive pygmy sundew grows in a lateritic clayey-gravelly soil and has a vibrant red, semi-erect rosette, which resembled a small form of *D. scorpioides*. The population included plants with stems to 5 cm tall, which appeared to be several years old.

Drosera silvicola (see Back Cover): This is a recently described pygmy sundew that occurs to the southeast of Perth. It has a semi-erect rosette that resembles *D. barbigera* and grows in lateritic gravel soil with a thin cover of leaf litter. The plants grow up to 5cm across and have orange-petalled flowers.

Utricularia multifida: The bladderwort *U. multifida* was commonly seen in many sites, occurring in the floors of seasonal swamps and along drainage lines where the leaves were often shallowly submerged. The lobed, pink flowers were also readily seen growing in roadside ditches. At one location near Bunbury a European honeybee was observed to fly from flower to flower to presumably drink nectar from the base of the nectary spur. The entire scape bent sharply forward under the weight of this visitor. At this location *U. violacea* was also found, however no open flowers were seen.

It was excellent to see so many carnivorous plant species in the wild, and to both revisit some superb sites and see some new sites. It provided me with observations of additional species, including some opportunistic sites of plant-animal interactions, particularly with regards to pollination by, and commensal predation of visiting insects.

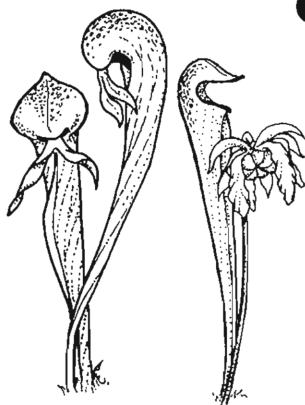
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Front Cover: *Nepenthes tobaica* and *Thomisus nepenthophilus* spiders, by ICPS photo contest winner Thomas Carow. See article on page 85.

Back Cover: *Drosera silvicola* in Western Australia. See article by Robert Gibson on page 78.

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