Carniflora Australis

Journal of the Australasian Carnivorous Plant Society Inc.
Number 5, March 2005

ISSN 1448-9570 PRICE $5.00 Free with Membership

Subscription

All members, single, family and overseas $AU25.00

Please make cheques or money orders payable to the Australasian Carnivorous Plant Society Inc. Membership and correspondence should be forwarded to the Secretary at

www.carniflora.com

PO BOX 4009
Kingsway West NSW 2208 (Australia)

Meeting are held on the second Friday of each month
Time: 7.30pm—10.00pm
Venue: Woodstock Community Centre
Church St, Burwood
Ph. 4684 3478

Contents

Front Page: *Cephalotus follicularis.* **Greg Bourke**
Back Page: *Darlingtonia californica.* **Jim Forshey**

UPCOMING SPEAKERS AND EVENTS

Date	Subject	Speaker
8th July	Slides from Cairns	Greg Bourke
12th August	General Discussion	
9th September	Pinguicula	Helmut Kibellis
14th October	Tissue Culture	Fiona Chadwick
11th November	Borneo	Greg Bourke
26th November	Christmas Swap Meet	Richard Sullivan's House
9th December	General Discussion	

Committee 2005

President:	Greg Bourke
Vice President:	Kirstie Wulf
Secretary:	Jessica Biddlecombe
Treasurer:	Steve Moyle
Committee Members:	Peter Biddlecombe
	Richard Sullivan
	Kirstie Wulf
	Helmut Kibellis
	Luis Mendoza
	Robert Pollet

Yuragir National Park

Dan Clark
Canberra
Email: dan.clark@optusnet.com.au

I was fortunate enough to spend a few weeks over Christmas 2004 basking in the sun at my partner's folks place on the NSW north coast. Not to miss a chance at some botanising I took every opportunity to visit the nearby Yuragir National Park. This park protects very large areas of coastal heath and Banksia scrub that reminds me strongly of southwest Western Australia. Sandy soils predominate near the coast, developed on dunes formed during the last ice age. Peaty organic soils are common between dunes (**Figure 1**). I'd not been able to find any flora species list for the national park, so I went in with an open mind and visited as many ecological niches as possible.

Figure 1. Heathlands in Yuragir National Park (Emma for scale).

After only ten minutes walking along a coastal track I made my fist discovery – a smattering of crimson red *Drosera spatulata* growing on an animal track through the heath. More was to come further along the track as it crossed a shallow gully clothed in heath up to knee height. Where the gully met coastal cliffs and the water table approached the surface a tangled profusion of coral ferns grew. In amongst the dense foliage I spied a splash of red which resolved itself into a *Drosera binata* leaf! My excitement grew as I counted thirty points – a *Drosera binata var. multifida f. extrema* for sure!

Clambering around in the scrub near to the track revealed a few more leaves with a similar point count. Many displayed a beautiful symmetry, resembling coral or antlers (**Figure 2**). The growing points of these plants were safely hidden from the harsh salt spray and hot drying summer sun beneath the tangle mass of vegetation. The petioles were surprisingly delicate, with the weight of laminas being almost completely supported by vegetation. With other commitments pending a quick wander off the main path along a wallaby track was rewarded with more plants with a maximum count of 36 points. The thirty-six pointer was curiously asymmetric – there was certainly scope for more points, but maybe on another day.

Subsequent trips to the various swampy areas over the coming days succeeded in introducing me to the local wildlife, comprising mainly of hungry mozzies. *Drosera binata* was quite common in the peatier areas on the dune slopes (presumably water seeps out from the base of the dunes), and to a lesser extent on swamp flats, but only where coral ferns were abundant. As with the first day, the plants grow amongst a dense layer of heath plants up to 2ft high, with only the leaf visible. One particular swamp was a gold mine of division with several plants spotted sporting over forty points. The most divided example I found had 56 points! (**Figure 3**). I found it almost impossible to count the points *in situ*, so the leaf dutifully followed me

Figure 3. Fifty six point D. binata leaf emerging from dense heath.

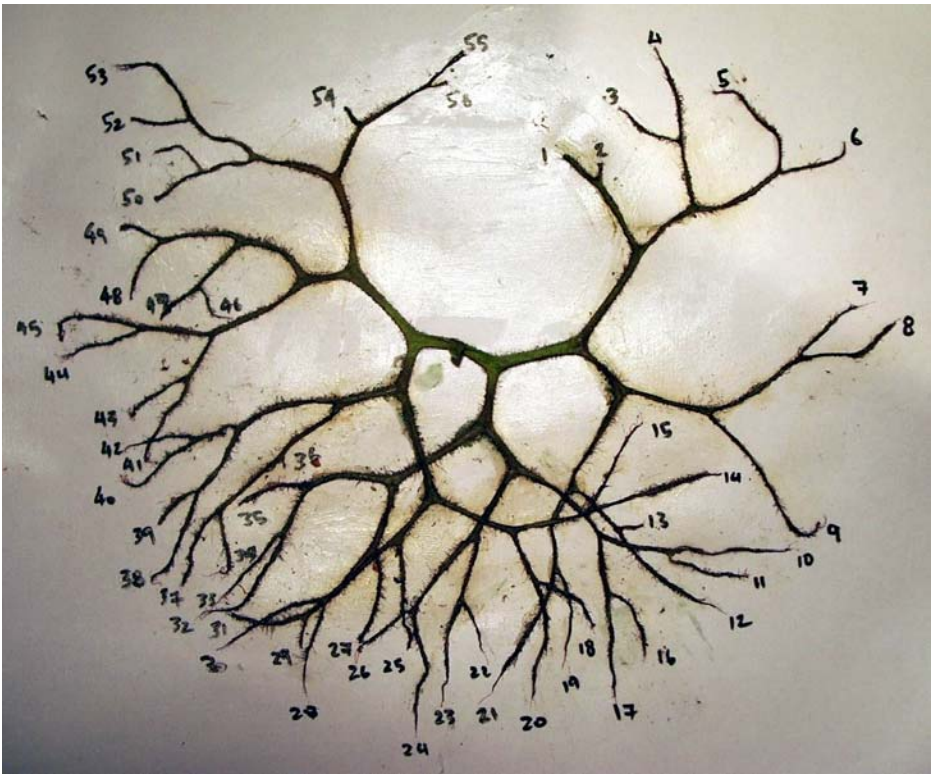


Figure. 4. Fifty six point D. binata leaf stuck to a sheet of paper with points numbered.

home where it was pasted to a sheet of paper and the points numbered (**Figure 4**). Having only read of *Drosera binata var. multifida f. extrema* with anywhere near forty points from Stradbroke Island (300km to the north) I was pretty amazed by these finds.

Perhaps the most amazing thing is the hardiness and salt tolerance of the carnivorous plant species in the coastal heaths of Yuragir (with the possible exception of *Drosera binata* which invariably has sheltered growing tips). Where the heath meets the sea, seeps form small freshwater swamps (at the 10m scale) only a few metres above the high tide mark (**Figure 5**). Bare peat faces are home to beautiful red *Drosera spatulata* (**Figure 6**) and *Drosera pygmaea*. Amongst the reeds of the swamp floors a striking marked and coloured form of *Utricularia uglinosa* is quite common (**Figure 8**). All the plants are

exposed to the salt spray and I'm sure must be inundated by the ocean during storms. Despite the apparent harshness of their environment they seemed to be in excellent health.

Yuragir National Park is an amazing place that I'd recommend to anyone, and not only for it's species of carnivorous plants. I'll be heading back as soon as possible – maybe next time I'll score more than 56 points or find the illusive Evans Head variant of *Drosera peltata* which has been recorded from just to the north…

Figure 5. Small swamp in a seep from the dune base. Dark line on the sand is the recent high tide mark.

South Western Australia - The coastal Plains

Greg Bourke
Sydney
E-Mail: sydneycarnivorous@hotmail.com

Over a two year period, 2003/2004 I made four trips to Western Australia to search for carnivorous plants. During this time I travelled more than 20,000 kilometres by car and found more than 60 species of carnivorous plants. In this article I will attempt describe the various habitats and species seen along the coast from Kalbarri (590 km north of Perth) south to Augusta and eastward to Ravensthorpe **(Figure 1).**

The 30 to 50 kilometre wide strip along the south western coast consist of many soil types. From Kalbarri south to Jurian, Lateritised plateaus on Jurasic and Permian sediments and Proterzoic granites dissected at the fringes. On the western margin of this section, Quaternary sands and calcarenite can be found. From Jurian to Busselton, pale and yellow deep sands dominate but sandy and loamy gravel and deep grey sands also occur. Along the south coast to Esperance eroded lateritised plateaus on tertiary sediments occur as well as coastal headlands of gneisses and migmatites. Coastal dunes also occur in places. To put it simply, the soils in this region are some of the oldest in the world and have eroded over thousands of years to create very specific and isolated habitats. With such a variety of soils it is not surprising that so many species of plants occur.

Kalbarri is a fast growing tourist destination. Well known for it's fishing, surf, magnificent Gorges and endemic plant species. This area attracts early rains in Autumn and is home to some unique species of *Drosera.* Two tuberous species *Drosera radicans and Drosera stolonifera ssp prostrata,* and one pygmy *Drosera coolamon* are found only in this area. These plants can be found growing in sandy soil on the gently sloping drainage lines above the Murchison Gorge. *Drosera macrantha ssp macrantha, Drosera menziesi ssp thysanosepala* and *Drosera neesii ssp borealis* can also be found in similar soils.

Figure 1. Southwestern Australia. This article generally follows Highway No.1 from Kalbarri in the North down the coast through Perth to Bunbury then South/East to Albany and Eastward to Ravensthorpe.

200km south of Kalbarri is the town of Eneabba. The soil here is sandy, the vegetation is low and the lay of the land is generally flat. There are some low hilly sections of laterite where *Drosera barbigera, Drosera miniata* and *Drosera macrantha ssp macrantha* can be found. In the deep sand small shrubs, grasses and herbs protect the carnivorous plants from the harsh conditions. *Drosera zonaria*

is often found hidden well under the protection of these shrubs. Between the shrubs and grasses pygmy *Drosera* such as *Drosera eneabba*, *Drosera closterostigma and Drosera menziesii ssp thysanosepala* can be found. The flowers of several herbaceous perennial species like *Patersonia juncea* disguise the flowers of *Byblis lamellata* making it difficult to locate. From late Autumn to early summer, violet flowers can be seen everywhere in this region.

Further south along the coast towards Cervantes (Home of the famous Pinnacles Desert) *Drosera erythrorhiza ssp magna* and *Drosera stolonifera ssp porrecta* are found in areas where the shrubs are generally taller (to 3m) giving them protection from wind but allowing good light to filter through **(Figure 2).**

Drosera menziesii ssp menziesii, Drosera menziesii ssp penicillaris, Drosera microphylla, Drosera subhirtella, Drosera heterophylla

Figure 2. *Drosera erythrorhiza subsp magna* growing under the protection of *leptospermum sp.* The sandy soil is covered with a thin covering of peaty soil made from the *leptospermums* decomposing leaves. Plants growing in these protected areas have a longer growing season than those in more exposed locations.

Figure 3. A clump of *Drosera heterophylla* plants growing in sandy/clay soil near Eneabba. In heavier soils this species produces daughter tubers close to the parent. The stems of these daughter tubers travel up the conduit of dead roots left by the parent plant the previous season. The result is what looks to be a small shrub.

(Figure 3) and *Drosera marchantii ssp prophylla* can be found from Cervantes and to the east and south in localised colonies. A hybrid of the latter two species was located in a drainage line in this region by Daren O'Brien several years ago. The hybrid is uncommon and found amongst the two parent species where the soil is sandy clay. This hybrid was recreated by the author in 2001 and is expected to flower in the spring of 2005 or 2006. *Drosera subhirtella* and *Drosera erythrorhiza ssp magna* are found at the same site in slightly sandier soils.

In the sandy soils to the west of the Darling Range and to the south of Perth, are some amazing colonies of carnivorous plants many of which are under threat from development. Near the city of Armadale lies a large ephemeral swamp that has been cut by a freeway and is being drained. The sandy soil lies on top of a large claypan here and can be under water for many weeks

Figure 4. *Utricularia ineaqualis* in September at the Armadale claypan

in late Autumn to winter where *Utricularia menziesii, Utricularia multifida, Utricularia inaequalis* **(Figure 4)** and *Utricularia violacea* thrive. Without the flooding the latter three annual species would surely be lost. *Drosera heterophylla* grows here in the tens of thousands, *Drosera gigantea* grows in dense localised colonies **(Figure 5)** and *Drosera menziesii ssp menziesii* grows scattered amongst the shrubs scrambling over them to get there beautiful purple flowers above the surrounding vegetation. Many of the plants in this swamp are tuberous or annuals including several species of Orchids.

Following the highway south, the stretch between Armidale and Bunbury yields some more special plants. The tiny erect *Drosera bulbigena* can be found in a few small patches growing amongst the trunkless *Xanthorrhoea brunonis ssp semibarbata*. Unfortunately much of *Drosera bulbigena* habitat has been lost to farmland and housing.

Drosera erythrorhiza ssp collina and *Drosera erythrorhiza ssp squamosa* are two species restricted

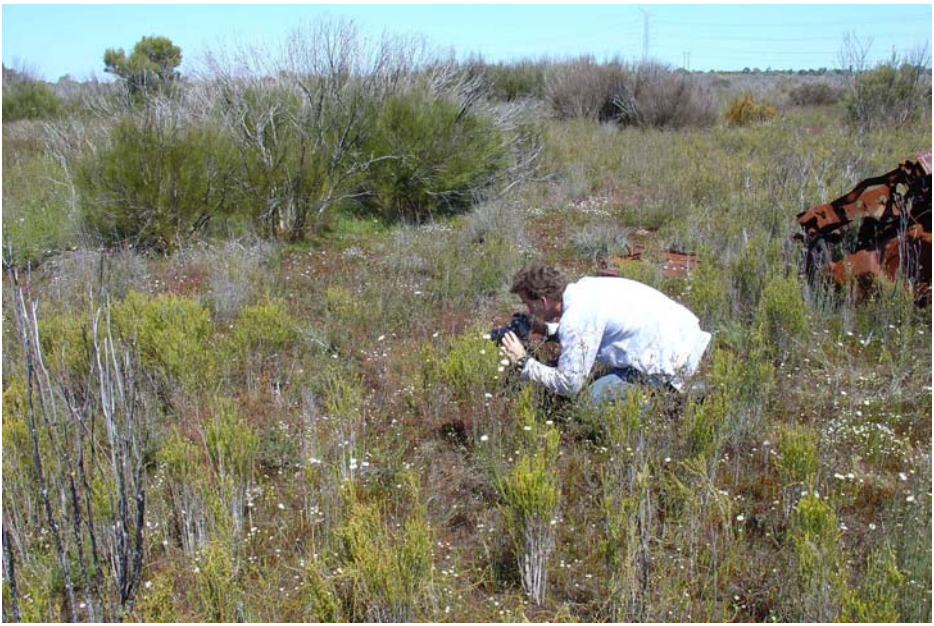


Figure 5. The Armadale claypan showing typical vegetation with Daren O'Brien photographing a colony of *Drosera gigantea*

Figure 6. Deep sandy soil of the plains west of the Darling Range. Banksia Grandis and Eucalyptus sp. Provide shelter to the sparse vegetation beneath. A small colony of *Drosera erythrorhiza ssp. collina* can be seen in the centre of shot.

to the Darling range and the adjacent plains. Although the two were not seen growing together, intermediates were found as well as some very odd looking *Drosera erythrorhiza ssp collina.* The habitat that these two species occur is very similar **(Figure 6)** as well as the habit. Colonies of half a dozen or so plants are not uncommon but plants usually occur singularly **(Figure 7).** I believe further study is required into the whole *Drosera*

Figure 7. *Drosera erythrorhiza ssp. squamosa* growing in deep sandy soil

erythrorhiza complex which is not as cut and dried as current publications suggest.

In the Bunbury area there are numerous swamps divided by dunes of deep silica sand. This sand is like nothing I have ever seen before. The grains are all the same size (approximately 1mm in diameter) and spherical. The soil is therefore very well drained. *Banksia sp.* and *Acacia sp.* are common in these soils as well as *Stylidiums*, Orchids and *Drosera*. The large non clumping form of *Drosera zonaria* was found here (**Figure 8**) as well as *Drosera paleacea ssp paleacea.*

Figure 8. *Drosera zonaria* near Bunbury

In the swampy areas around Bunbury *Drosera tubaestylis, Drosera nitidula ssp nitidula, Drosera glanduligera, Utricularia multifida, Utricularia violacea*, and *Utricularia ineaqualis* can be found flooded by up to 300mm of water for several weeks. The first time I visited the area was in April where the colonies (over 50 plants) of *Drosera tubaestylis* (**Figure 9**) were up and flowering. In September of the same year I returned to the site to find these under water. The plants looked healthy enough living as aquatics and a visit to the site again in October of the following season revealed that they were able to resume normal active growth once the waters had receded. At this stage the *Utricularia* species were in full bloom with many thousands of *Utricularia multifida* being pollinated by European Honey Bees (**Figure 10**).

South from Margaret River and eastward to Albany sees a general change in habit. This area receives the greatest rainfall in the South West. *Leptospermum* sp. are common in low laying areas where acidic peaty soils dominate. *Drosera stolonifera ssp compacta* is common growing in a wide range

Figure 9 (Top). *Drosera tubaestylis* near Bunbury in early May. This is before the winter rains.
Figure 10 (Bottom). *Utricularia multifida* at the same site as Figure 9 in October after the winter flooding has subsided

This Page from Yuragir National Park **Figure 2 (Top).** Thirty point *Drosera binata* leaf emerging from dense heath.
Figure 6 (Above). *Drosera spatulata* (bare peaty bank above the swamp)
Figure 8 (Right). *Utricularia uliginosa* growing a metre or two above high tide mark in a reedy seep at the dune base.

Opposite page from South Western Australia - The coastal Plains **Figure 14 (Top).** *Cephalotus follicularis* near Walpole
Figure 15 (Bottom). *Cephalotus follicularis* with *Drosera hamiltonii* near Walpole.

Figure 11. *Drosera stolonifera ssp. compacta* growing in the shallow peaty soils of a granite outcrop.

of soils including the margins of peat swamps, *Eucalypt* and *Allocasuarina* forest and on granite outcrops. Plants of this species tend to grow singular in the forest but on granite can form large colonies (**Figure 11**) up to 40cm in diameter. I assume this is simply because there is no way of spreading from the cracks they are growing in.

Drosera erythrorhiza ssp erythrorhiza is another variable species in the complex. Plants matching the type were only seen at one site, east of Albany. The species was commonly seen from Augusta to Esperance in a wide range of habitats but all consisting mostly of fine sand. Many of the plants seen were in large colonies of up to 100 plants. These colonies are asexually produced from horizontal stolons produced from a parent plant. In culture these are generally produced deep in the pot often coming out of drainage holes in the bottom but in the densely packed fine sands along the coast they often grow along the soil surface (**Figure 12**) producing small trapping leaves on them as they grow.

The seepage zones on the margins of swamps on the Southern coast are also home to one of Western Australia's most famous plants. Known as the Western Australian or Albany Pitcher Plant, *Cephalotus follicularis* can be difficult to locate even with precise location information. Without fire its habitat becomes overgrown with

sedges, *Leptospermum* and *Melaleuca* species. One site I visited the vegetation was so dense we had to push our way through the trees. Here the *Cephalotus* plants were large and green (**Figure 13**) with many non carnivorous leaves. Almost all the pitchers inspected were half filled with the decaying bodies of ants which *Cephalotus* feeds on almost exclusively.

In the Walpole region *Cephalotus* was seen at several sites that were not protected. The first (**Front cover and Figure 14**) was a sunny site where the vegetation was stunted due to environmental conditions. This site according to the locals had not been exposed to fire for many years if ever. The plants here receive full sun all day and nutrient rich water flows across the soil surface for much of the year. The rich colouration is probably due to the combination of sun light and nutrients.

Figure 12. Drosera erythrorhiza ssp. erythrorhiza with auxiliary stolons near Augusta

Figure 13. This large pitcher of *Cephalotus follicularis* found at a sheltered site near Walpole. The plant had more than 30 pitchers on it

I also was able to visit a site that

had been burnt the previous summer (P. Mann pers. comm.) where the Pitcher Plants grew in deep spongy peat derived mostly from sedges and what appeared to be a member of the *Meeboldina* (Rushes) family. Here the plants were a beautiful red colour (**Figure 15**) and grew along side *Drosera hamiltonii* and *Drosera binata.*

Utricularia simplex, Utricularia tenella and Utricularia violacea were seen in the sandy depressions around Walpole with *Drosera microphylla* and *Drosera sulphurea.* This soil is fairly high in peat under the surface and tends to drain via surface water courses rather than the water soaking in. Because the soil is waterlogged for much of the year, there is little competition from trees and grasses, sedges and *Xanthorrhoea* although present are fairly sparse. The *Drosera* species were only seen in early stages of flowering and probably continue into early December.

Many species of Pygmy *Drosera* were seen along the southern coast. In winter many of these are difficult to identify to the untrained eye (ie. Mine) but I was lucky to catch a few flowers here and there which enabled me to identify some of the difficult ones. The pygmy *Drosera* grow in some of the harshest conditions yes many species like *Drosera scorpioides* manage to hold their delicate rosettes high on thin stems (**Figure 16**). In the wettest times the plant will send aerial roots down towards the soil in an attempt to gain extra stability. These roots travel through the dead foliage then into the open air before heading deep into the soil. These hair like roots can be 300mm long and carry valuable moisture into the rosette during the dry of summer. Although soil type is not specific, deep pots are necessary to successfully cultivate these species in the long term.

Figure 16. Red aerial root make their way down the tem of this pygmy Drosera

One of the most amazing sites for Pygmies (**Figure 17**) was near Broke Inlet where three species grew on the beach right above the high tide mark. *Drosera pulchella, Drosera enodes,* and *Drosera occidentalis* ssp. *australis* grew together in open areas in a band between the sea and the *Allocasuarina* forest.

Drosera fimbriata was once thought to be quite rare being found only in a few small pockets of bush beside the highway between Albany and Jerramungup, but recent discoveries have been made in the Denmark area. Given the diminutive size of this species it is not surprising that it has been overlooked at these sites for so long. The soil is generally white sand and the surrounding vegetation sparse.

The Ravensthorpe area is home to an astonishing amount of endemic species. More than 12 species of terrestrial Orchids are found only within the boundaries of the Fitzgerald National Park as well as endemic Banksia and Eucalypt species and many others. There are many species of carnivorous plants in the park also but the highlight is the endemic and unmistakable *Drosera prostratoscaposa*. Discovered by Phill Mann in the 80's this beautiful rosetted species emerges early in the season flowering well before the rosette forms. The scapes emerge vertically then bend over to run parallel to the soil holding the open flowers straight up. Phill and I revisited the site in April 2003 and our timing could not have been better. We found plants growing under the shelter of Eucalypt trees in fine grey sand as well as sunny exposed locations on the side of a hill in sandy gravel. Although the area these plants occur is fairly small, it is likely that it has a wider distribu-

Figure 17. *Drosera occidentalis ssp australis* top and *Drosera pulchella* at Broke Inlet.

tion throughout the park.

In the orange clay soils on the banks of a small creek in the Fitzgerald National Park a colony of *Utricularia tenella* was found with only white flowers. This species really looked out of place in the dry soil. In the same soil type on higher ground, *Drosera lowriei, Drosera menziesii ssp. menziesii* and *Drosera subhirtella* could be found amongst the dense stunted heath. The latter two species scrambling above the low vegetation to show off their conspicuous flowers.

I have not been able to cover all the species or habitats seen within the area discussed in this article let alone that of South Western Australia. It's an amazing place that would take more than a lifetime to explore. No doubt more of its secrets will be uncovered in the coming years.

Acknowledgements.
I'd like to thank Phill Mann, Robert Gibson and Daren O'Brien for sharing their vast knowledge on the Carnivorous plants of Western Australia and Michelle Leer for her incredible patience with me.

References:

Hoffman, N. & Brown, A. (1984) *Orchids of South Western Australia,* University of Western Australia Press

Lowrie, A. (1987) *Carnivorous Plants of Australia - vol. 1*, University of Western Australia Press

Lowrie, A. (1989) *Carnivorous Plants of Australia - vol. 2*, University of Western Australia Press

Lowrie, A. (1998) *Carnivorous Plants of Australia - vol. 3*, University of Western Australia Press

Scott, J. & Negus P. (2002) *Wildflowers of Australia's South West - Augusta - Margaret River Region*, Cape to Cape Publishing

Taylor, P. (1989) *The Genus Utricularia—a taxonomic monograph,* Royal Botanic Gardens Kew

Wajon, E. (2000) *Colour Guide to Spring Flowers of South Western Australia - Part 2. Perth and the Southwest,* Wajon Publishing Company

My Life as a carnivorous plant wife

Michelle Leer
Sydney

I would imagine that most people reading this article don't actually know who I am. 'Michelle Leer' I hear you ask, 'what does she grow'? Well the truth is not a lot. I have managed to kill most of my herbs and the African violets on my window sill tend to curl and turn yellow. I am however the proud owner of a big blue glazed pot full of nepenthes, a valentine's gift from my other half, who I believe many people do know – Greg Bourke. I have to say I was quite chuffed when my nepenthes pot was dragged up the two flights of stairs and though they have suffered a little under my care they are growing quite well. I have no idea what sort they are but if any body asks, and believe me they do I just rattle off a couple of names I have heard Greg use. *Nepenthes rajah* and *Nepenthes rafflesiana* being the most common.

I have to say, before Greg came along I never gave carnivorous plants a second thought, not a conscious one anyway. All through my school years we had excursions in the Royal National Park around Heathcote. I always used to watch out for the unusual, red and sticky rosette plants growing on the side of the rocks. Imagine my surprise when I found out they were carnivorous – *Drosera spatulata* to be exact. And that my new boyfriend had a hobby revolving around them. Hobby – well maybe a slight obsession is a better term. Our study has become a library/photo archive for CPs, our new house was purchased primarily as four glasshouses could fit in the yard and our holidays become a search for the local CPs which brings me to the point of this article – our trip to WA.

Last October we jumped on a Virgin flight to Perth – gotta love those $99 fares – for a three week trip around the south west of WA. I knew at the outset that carnivorous plant stops would be a must especially as most of the places we intended to visit were in National Parks but I had no idea that by the end of the trip I would have perfected new skills included reading the GPS, spotting *Utricularia* in ditches from moving vehicles, climbing granite outcrops, and posing as a hand model to display the

latest find.

Our trip was pretty open, there were a few stops along the way that we were keen to see but in general we were just planning to follow the bonnet. One of our first stops was in Harvey (south of Perth) to visit Phil Mann. Phil took us to a few spots that he knew and sat down over a cuppa and helped us plot out our three weeks. The WA atlas we were carrying soon became dotted with sites along the road and suddenly our three weeks were no longer open to chance. We knew where we were going and exactly how many tracks we needed to follow to find the best sites. The first problem we noted was that there were way too many sites to visit in three weeks and the second problem became evident over the next few days – our trip was dogged by rain which made it difficult to do much more than explore the roadside ditches a couple of metres from the roadside.

But boy did we see a lot in those few metres. For those of you who know Greg, his eyes aren't the best but he can spot a single flower of a *Utricularia* in a boggy ditch while driving at 110km, added to that the rain was pouring making visibility next to nothing. I suggested a couple of times that I drive and he look but he found he was too busy being car sick to pay attention so most of the 6000km were driven by Greg while I snoozed in the passenger seat. I did find though that after a week, even though I was really bad at spotting the plants, I could pick the areas where different plants would grow and once we were out of the car while Greg was taking photos I was flitting here and there finding new plants, and taking notes. I remember in particular one granite outcrop we found – it had just been raining and the rocks were covered in moss and lichens – it was pretty spectacular on its own but when we got out of the car it was even better. Along the fringes of the outcrop we found *Drosera macrantha ssp. macrantha* and through the middle there was a blanket of *Utricularia multifida* flowers. I think we spent 4 hours exploring just one area around 100m sq.

Another great area we stopped at was Northcliffe which had recently been gutted by a bushfire. The earth was black as night and the new growth was just shooting through in the most vivid green. It had just stopped raining so the colours of the area were really deep and we both went nuts with photos – Greg was obviously taking photos of CPs – *Drosera* ….I believe while I got

to indulge my own hobby of photography. It was at times like this that our two hobbies complimented each other. Greg talks about trips to Borneo and Sumatra, in fact our next trip is to Darwin and I am sure this will include some carnivorous plant searching but the fact that many of these plants exist and thrive in national parks suits me just fine. While Greg spends his time crouched over a carnivorous plant taking notes and photos I get to roam about and explore some of the most beautiful places Australia has to offer.

So some of the highlights of our trip – Cape Le Grande National Park – one of the few places it didn't rain. I explored the beaches and rock formations while Greg hiked out behind Thistle Cove to the Swamp to see what he could find – a slightly disappointing adventure he told me as he had to struggle through the heath land to get through.

The Karri Forest were pretty amazing and we discovered not only CPs *(Drosera modesta* and *Drosera pallida*) but also some fantastic orchids (*Pterostylis recurva* being my favourite). I think the most exciting day for Greg was when we found *Cephalotus follicularis*. We had been scanning the ground and both called out at the same time – I was slightly disappointed to find that mine was only tiny compared to the real thing Greg had found – a couple of hours of photos followed.

Though I didn't go to WA to find carnivorous plants I can understand why an enthusiast would. In three weeks we travelled 6000km along the coast and up through the middle of the wheat belt, we found 50+ species. Greg was impressed because from the top of my head I could rattle off at least 20. I became quite adept at calling out *Drosera pallida* (in fact I got quite bored of it as it seemed to be everywhere) and *Drosera macrantha*.

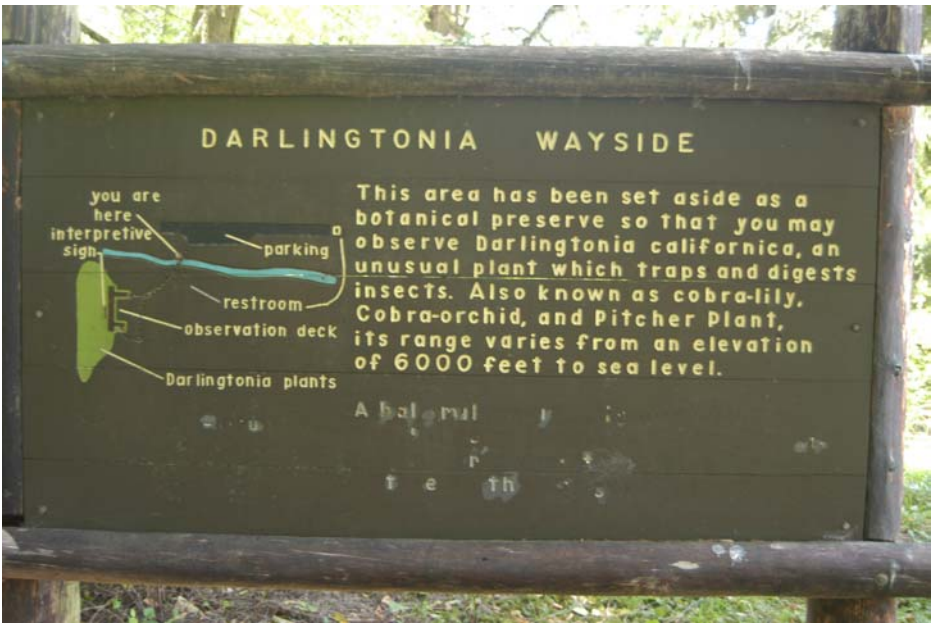
Imagine my surprise when I found out that *Drosera erythrorhiza* flowers before it grows leaves. Only a few of the tuberous plants in Greg's collection have shown their little heads so far this year but I admit to being guilty of taking visitors at the new house into the shade house to show them our babies – oh and explaining how the nepenthes pitchers work – and describing the new fogging machine for the highland glass house – oh dear – perhaps Greg's enthusiasm is wearing off. Oh well if you can't beat em – you might as well join em!!!!

A visit to the “Darlingtonia State Natural Site”

Jim Forshey
Placerville, California
jim@Seahorses.com
Photos by Jim, Agnes and Anessa Forshey

The “Darlingtonia State Natural Site” is an 18-acre botanical park which provides parking and a boardwalk trail into the home of *Darlingtonia californica*. Also called a cobra lily, this strangely-shaped but beautiful plant is the only member of the pitcher plant family (Sarraceniaceae) in Oregon.

Eight miles north of Florence, Oregon, off of highway 101, you will find the “Darlingtonia State Natural Site” the only park in North America that is dedicated to the protection of a single plant species “*Darlingtonia californica”* also called the Cobra Lily, what a menacing name for such an interesting Carnivorous Plant. Which lives off of photosynthesis and the digestion of insects. After turning



right off of highway 101 and going a few hundred yards you will find the entrance to the park clearly marked and a small area for parking cars. As I started off down the trial, which at first was disappointing to me, "were are the carnivorous plants" I thought, this does not look like an area they should be in. But I quickly came across the boardwalk. Which lead me over an field of about 50' x 100' of *Darlingtonia californica* growing in sphagnum moss, what a great view, to be looking over 1,000 of *Darlingtonia* and to know you are not damaging them by walking through them.

Depending on what time of year you go you see various stage of plan development. If you go in spring you should see its flowers with five purple petals (surrounded by yellow sepals), but any time of year this area is worth viewing.

Besides its parking area and boardwalk, Darlingtonia State Natural Site offers a small picnic area. Nearby scenery includes a lush assortment of vegetation that includes rhododendron, spruce, cedar, skunk cabbages, salal, mosses, wax myrtle and shore pine to name a few. And most surprising of all is that there is no fee to use this park.

Culture note;

For years I had trouble growing *Darlingtonia californica* in my hot climate, until I read about them liking their roots kept cold. Since then I have placed them in the cooler spot in the green house, which has helped a lot. Also friend of mine (Danny Kent) suggested that I use an air pump with an air stone attached to circulate the water around the pot of the *Darlingtonia californica*, I hope to be trying this real soon.

.. Enjoy..

Propagation of *Catopsis berteroniana*

Greg Bourke
Sydney
sydneycarnivorous@iinet.net.au

Last year while in Victoria I obtained a single plant from the Bromeliaceae family *Catopsis berteroniana*, an epiphytic species from South America. A few days after I got it home I noticed that the centre of the plant had begun to rot. Knowing a little about Bromeliads I knew that the plant was surely doomed if I did not do something. I had never been able to save a plant in the past once the centre had begun to rot but I had an idea.

I began destroying my plant by removing the leaves that were rotten which meant the centre two or three leaves. These are the ones that came without too much force. I then poked a hole through the centre of the plant and out its base so as to drain any water from the centre of the plant. I hoped this would prevent the heart from rotting further. Water could still be held in the leaf axials preventing dehydration.

After a week, the *Catopsis* had begun to develop a pup from within the leaf axial of the outermost leaf (**Figure 1**). Although the parent plant was lost, at least I had not lost the species.

Figure 1. Pup forming in the leaf axial of the parent plant

Most growers of Bromeliads leave pups on the parent plant until they are one third the size of the parent then remove it and pot it up. This drains energy from the parent and restricts its ability to produce more pups. Generally speaking, once a Bromeliad has flowered and begins producing pups it dies leaving the

Figure 2. Recently removed pup with callused base. Roots not yet forming.

new generation to take over so why not leave the pup on?

I removed the first pup at about 5cm high. To do this I removed the outer leaf exposing the pup and then tore the pup downwards to take some of the parents tissue with it. I then placed the pup vertically on the bench out of full sun and fairly dry until the base had formed a callus (**Figure 2**). The pup was then tied to a cork branch where it soon developed roots and attached itself to the branch (**Figure 3**).

I have continued the same process three times and now only six months since I bought the plant, I have three plants. At the time of writing, the parent was producing two more pups bringing the total to five. I had no idea that this would be so successful and now believe that I may be able to get up to five more pups before the parent plant runs out of energy.

Figure 3. A six month old plant in the foreground firmly attached to the cork branch with younger pup behind.

Nepenthes in the garden

Greg Bourke
Sydney
sydneycarnivorous@iinet.net.au

Over the years my *Nepenthes* collection has grown and valuable space in the glass and shade houses have forced the hybrids out. I've always been reluctant to part with plants so I began experimenting with them in the garden. At first I tried a few of the hardy hybrids like *Nepenthes* 'Rokko' and *Nepenthes* x *ventrata* with good success. I prepared the soil then by mounding a mixture of Orchid Bark, Sphagnum Moss and Peat Moss with a watering system misting the surface daily. The reason for mounding the soil was that I thought the natural soil below would be too rich and kill the plants. I soon realised that this was not true as the plants quickly reached this soil and took off.

Nepenthes ventricosa x ovata

Nepenthes ventricosa x ovata

Notes to contributors

Contributions including articles, letters, photographs and drawings to the journal are greatly appreciated and may be forwarded to the societies postal address or online. The views expressed in this journal are of the authors not necessarily those of the Australasian Carnivorous Plant Society Inc.

Contributions to the journal may be submitted on 3.5inch (PC) disc, CD or by email. Use Microsoft Word whenever possible. For instructions on submitting photographs and diagrams please contact the editor (sydneycarnivorous@hotmail.com). Contact details are preferred for publication but may be excluded by the authors request.

Articles may be reproduced with written permission from the society. Photographs and drawings remain copyright of the author and may not be reproduced without the author's permission.

Dedicated to Conservation and Education

Two years ago, I have moved to a more coastal area near Wollongong where humidity is always quite high and temperature fluctuations are relatively small. Winter temps range between 5ºC and 15ºC and summer temps between 15ºC and 35ºC. This has allowed me to grow many hybrids and some species in the ground. I now have a total of 11 hybrids and three species planted straight into the soil. The results have been great. What's most interesting is what each particular plant has been targeting in relation to prey. *Nepenthes ventricosa* and its hybrids like snails, *Nepenthes khasiana* and *Nepenthes khasiana* x *alata* targets ants and *Nepenthes alata* has been catching small bush cockroaches.

Once established in the ground these plants require very little watering. Next time you take cuttings of your favourite *Nepenthes* hybrid, stick a few in the garden and see what happens.

Nepenthes hybrids