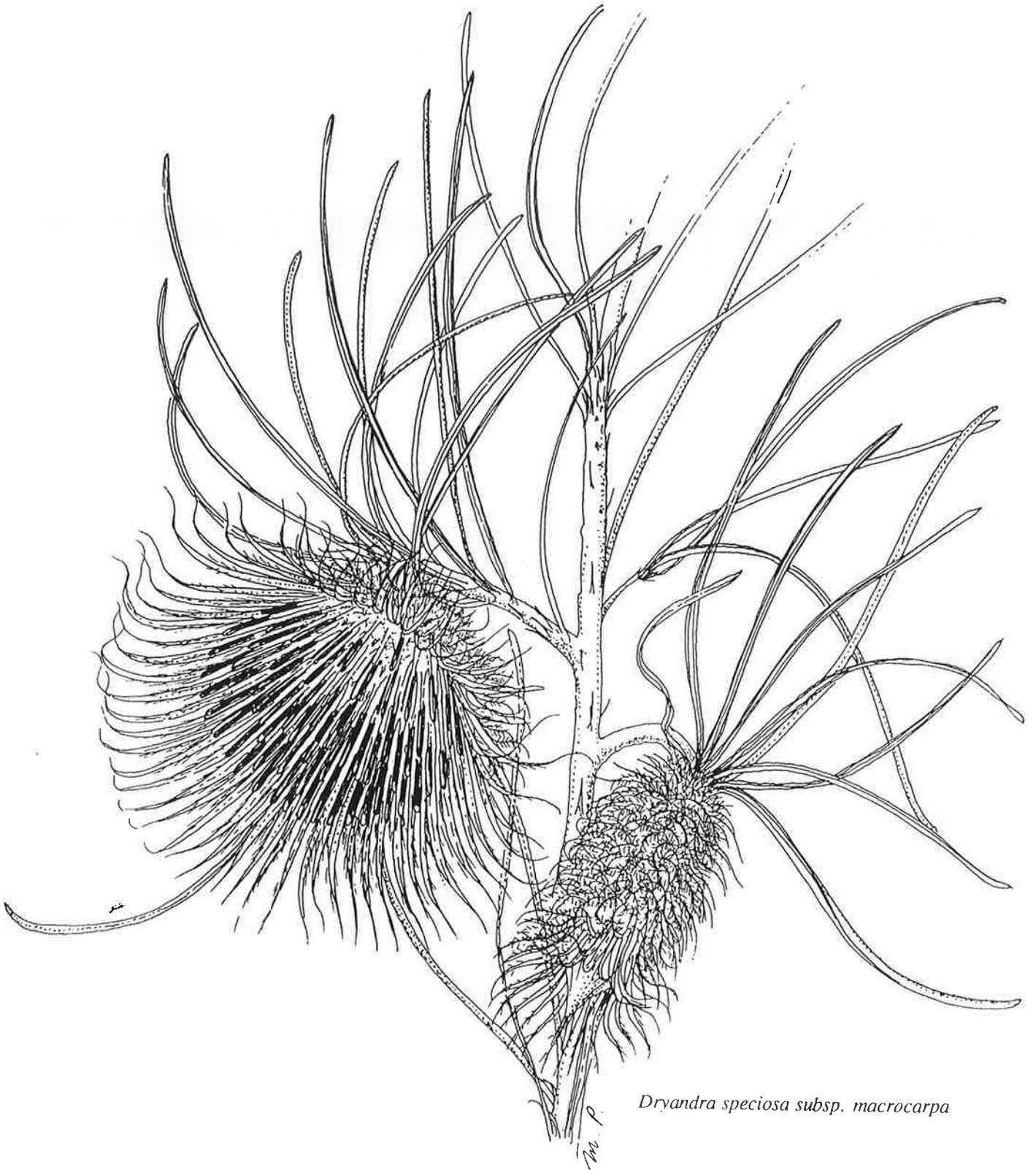


DRYANDRA STUDY GROUP

NEWSLETTER NO. 33



Dryandra speciosa subsp. macrocarpa

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This is the form of *D speciosa* from Badgingarra. The flowers are usually red and fewer per head than the Tammin form, *D speciosa* subsp. *speciosa*. It is a small shrub to about 1 metre and is popular and hardy in cultivation. It is sometimes slow growing.

DRYANDRA STUDY GROUP

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Welcome to the July issue of our Newsletter. By now, many of us, I expect, have virtually given up on rain. So far everything is surviving but plants don't seem to be flowering as well this year as last. Please send me any notes about your observations of how the long hot summer and dry winter (at least in southern Australia) have affected your dryandras.

Margaret has provided a number of very interesting accounts of bush excursions to see dryandra. It is great that continuing surveys are revealing more populations of species thought to be endangered. It is however very disconcerting that some species such as *D aurantia*, seen to set so little seed. I have also included several reports from members - all information is welcome and helps to increase our knowledge of dryandras. If you have observations on any aspects of dryandra please let me or Margaret know. I endeavour to publish everything I receive. Lastly, I have included a couple of relevant items from other sources which I hope you all find of interest.

We need your help

I am busily preparing descriptions of species for the Dryandra book. The taxonomic treatment is based on Alex George's revision and Margaret is editing and adding ecological and other information. We need cultivation information on many of the newly described species, some of which have been grown for years under other names or under Ted Griffin or Alex George numbers. These are asterisked in the list below. If you have any details - germination, garden performance, other comments - on any of these species could you please send me a note. Any extra material will help make the final book more useful and complete.

Happy Dryandra growing,



Tony Cavanagh
Newsletter Editor

If you have any information on any of the asterisked species below, please send Tony a note.

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Notes on Dryandras in the Field

(Editors Note: I have extracted the following information from letters from Margaret. Her observations are always wonderfully detailed and add much to what we know about dryandras in the field, especially species which are rare or endangered. I hope everyone finds this information as useful as I have.)

1. A trip to Dandaragan and Gillingarra

(Editor's Note: Long time members will remember Keith Alcock who as leader of the Dryandra Study Group prior to Margaret did so much to advance our knowledge of dryandras. Keith has recently returned to Australia after many years in England and late last year had the opportunity to visit W.A. where he enthusiastically took up Margaret's offer to 'look at some dryandras'. From Margaret's account the trip was very successful.)

Study group members, Lloyd and Lorraine Carman from Adelaide made another of their trips to W.A. and they kept me informed of their planned itinerary. As it was such a good season for wildflowers this year, overnight accommodation was difficult to obtain and the Carmans had to book ahead and alter their plans accordingly. They were travelling from the north so Keith and I arranged to meet them at Don and Joy's 'Hi-Vallee' farm north of Badgingarra. We arrived just in time to join the Carmans and several other visitors for Don and Joy's tour of their remarkable property. I have written at length in previous newsletters about Hi-Vallee and its 19 dryandras. As usual, it was just as enjoyable and as interesting as ever.

On the way back towards Perth the following day the weather was awful, wet and very windy but the flowers were superb. One of the highlights was a massed display of *D. echinata* and *D. kippistiana* growing together west of Gillingarra. We went back to the location of *D. fuscobracteata* which Keith had seen when he was here in February. This time they were in flower. The inflorescences are quite small with pale yellow flowers with mauve hairs on the limb. They are surrounded by dark brown bracts, hence the name. Many mature plants are dying - due to aerial canker, Anne Cochrane later informed me. As if that wasn't bad enough, the road had just been widened and the best plants had been destroyed. We found *D. pteridifolia subsp. vernalis* there also - in full flower. This is a 'priority' listed species which is poorly collected. Also growing in the same area were *D. platycarpa* and *D. lindleyana subsp. pollostata*.

After lunch with Lloyd and Lorraine, Keith and I continued on, making a detour to Rica Erickson Reserve on the corner of Old Plains Road and Calingiri Road where the dryandra *polycephala* was still as spectacular as it had been a week or two earlier when I was there.

The following weekend Keith and I joined a group of friends mostly from the Wildflower Society doing a flora survey on a private property near Popanyinning. At the entrance to the property there is *D. squarrosa* and *D. stuposa*, the only two species there. Fortunately, contrary to the forecast of rain on the Sunday we had good weather for looking at some dryandra habitats on the way home. We drove across country to Dryandra forest (I think it is now a National Park, or soon will be). I took Keith to see the dryandras on one of my favourite walks not far from the settlement. In flower were: *D. nivea subsp. nivea*, *D. stuposa*, *D. nobilis subsp. nobilis*, *D. subpinnatifida subsp. subpinnatifida* and *D. squarrosa*. Also there, are *D. cynaroides* and *D. columnaris*.

Further on, after we passed through Wandering, just before reaching the jarrah forest we stopped to look at the dryandras at the 'type' location for *D. praemorsa var. splendens*. To our surprise and delight about half of the population had pink flowers. One plant had flowers as deep a shade as the best one I'd seen previously, in the garden of the late Ken Stuckey in South Australia.

2. A trip to Narrogin

On 28th September Brian Moyle and I went to look at a reserve east of Narrogin which I'd wanted to explore for quite a few years. On the way we stopped to photograph *D. meganotia* in flower at Yilliminning Rock and continued on to the reserve. It consists of patches of 'kwongan' heath interspersed with eucalyptus woodlands, mallet, morrel and wandoo. The dominant dryandra in the heath, growing in laterite, is *D. armata var. ignicida*. They were almost finished flowering and none were pink. I had a flora list for the reserve and *D. aff. conferta* ASG No. 4 is included. This is now *D. columnaris* but the plant there keyed out to *D. fasciculata*. Other dryandras we found were: *D. cynaroides*, *D. octotriginta*, *D. armata var. armata* and *D. vestita* (these not in flower). *D. subpinnatifida* in flower and *D. nivea*, *D. squarrosa* and *D. sessilis var*

sessilis. Also there is *D. nobilis subsp. nobilis* which had finished flowering and on the list, though we didn't see them are *D. ferruginea (subsp. ferruginea)* presumably) and *D. fraseri var fraseri*.

David and Sue Lightfoot were in town last week and we spent several hours at Kings Park where I showed them the dryandras in the 'Rare and Endangered' Garden and the new plantings in other beds in the botanic gardens. These are the result of Anne Cochranes germination trials and most are doing very well. *D. ionthocarpa*, *D. corvijuga* and *D. fraseri var oxycedra* having already flowered.

The dryandra with deep pink flowers at Mt. Ragged, incidentally, which I thought looked like *D. hirsuta* is *D. armata var ignicida*. Alex confirmed this. The plants which were still quite small and flowering for the first time after fire didn't look very much like the tall, bushy ones further west.

3. A trip to the Murchison River Area

In November I spent a marvellous three days with Brian Moyle, Pat and Norm Moyle (no relation) and Elizabeth George at Eurardy Station, Garratti Station and Alan and Lorraine Tinkers Caravan Park, Western Flora. It was supposed to be a verticordia trip. I was the only one who hadn't been to Eurardy, which is on the northern side of the Murchison River, but, you can no doubt guess what happened. *Dryandra borealis*, as you know, is supposed to be the northernmost dryandra, and we did see some plants 6 kms south of the Kalbarri turn-off on our way. When I first saw dryandras growing in several places on the station, in sand dune country, I assumed they were *D. borealis* until Margaret Quicke, the Manager, showed me some photos she'd taken of it in flower. It turned out to be like *D. fraseri var. oxycedra!* In 1983 I'd photographed a dryandra in flower on the first day of a trip to the Kimberleys. It was somewhere near the Kalbarri turn-off, I think. I've always thought it looked like *var. oxycedra*, though Alex identified it from the photo, as *var. fraseri*. We found more plants further south still on East Ogilvie Road, on our way to Yuna.

Eurardy is a magic place - highly recommended for a stay and tour of the property - incredible flora! The Quickes are a lovely couple and guests are made very welcome.

4. Further Notes on *Dryandra fraseri var ? oxycedra* at Eurardy Station

I have still not been able to confirm the identity of the dryandra plants I saw on an earlier visit to Eurardy station. I'm sure it isn't one of the other *D. fraseri* varieties and that, if it isn't *var. oxycedra*, then it would have to be another variety. It's quite possible that it hasn't been collected in flower so I've decided to go back when it's flowering if possible. I did a drawing of the capsule and seed of it and I've sent Alex a copy of the capsule, seed and seedling drawings. The Eurardy one is very similar to *var. oxycedra* which is quite different from the other varieties. The habit, too, is similar. Plants at Eurardy were not as tall as those at Three Springs but they all have very long branches from near the ground. *D. fraseri* is turning out to be almost as complex as *D. lindleyana!* One I took to be *var. ashbyi* from near Dandaragan has somewhat different capsules too.

5. A trip to Albany

In February, Shirley Loney and I risked the hot weather and leaving my plants unwatered for a four day trip to Albany. As it turned out, the weather was kind to us and we took the opportunity to do some checking up on several dryandras.

On the way down I went via Wagin, Dumbleyung and Nyabing to check out *D. drummondii* subsp. *macrorufa*. I thought it might have been at its peak but most plants had finished flowering. These 'mound' plants flower all at once so the flowering period is short and spectacular.

On Thursday we went to Mt Barker to Kevin & Kathy Collins Banksia Farm. After the banksia tour Kevin showed us his dryandras. Among them were some he couldn't identify. I thought they might be *D. plumosa* but Kevin described the plants from which he'd collected the seed several years ago, as tall and columnar. Then I suggested they could be *D. pseudoplumosa*. However, Kevin had found the plants on North Woogenillup Road, south of the Stirling Ranges and not from the type location on the northern border of the National Park. This was an exciting prospect as I've always considered that what we thought was its only location, in a gravel pit, to be unsafe. The population is quite large but it is killed by fire and the spot is a 'drive-in' area for tourists

and earth moving vehicles. From what I've heard, it could have been destroyed in this summer's fire in the Stirlings. Kevin agreed to make a trip at the weekend to collect a specimen from North Woogenillup Road and he sent it to me together with one of *D. ferruginea*. Alex has confirmed the identity of both, and they are both 'new' locations for these species.

Kevin's nursery of banksias and dryandras is expanding rapidly. I came back with some of his beautiful healthy-looking plants which I hope I'll be able to grow on, as well, in my garden.

The rest of the stay in Albany was very enjoyable. Shirley and I climbed Mount Melville and found *D. armata* there. The talk of the South West this summer is the incredible flowering of the marri trees *Eucalyptus* (or *Corymbia* if you must) *calophylla*. From the top of Mt. Melville the slopes and bush areas below were a mass of white blossom. On Saturday afternoon four of us went with the brother of one of our artists around Frenchman's Bay, where he lives, on off-road sandy tracks and to granite outcrops where we saw a rare *adenanthos*, *A. cunninghamii* and several banksias including the rare *B. verticillata*. Both plants were flowering. The only dryandra I spotted was *D. formosa* which is very common around Albany.

Kevin had mentioned another dryandra he'd seen on North Woogenillup Road. He thought it was *D. nivea* and he had several small plants growing from seed he'd collected from this population. After we left I began to wonder whether this could be my *mystery aff. nivea/brownii* which I mentioned in Newsletter 32 on page 5, second last paragraph. I had brought the plant from a nursery not far from there about 10 years ago. The plant at Cranbourne could have been from seed from Nindethana which is even closer!

Kevin and Kathy called in several days later and I showed them the plant. Kevin thinks it may well be the one on North Woogenillup Road. He said there's a roadside population as well as a nearby one on private property. He was shown it by the owner several years ago. The property owner thought it was a banksia! This could be another exciting discovery as I think it is a new taxon. As I haven't seen it in flower, the habit of the plants in the wild could be different - like *D. nivea* perhaps (i.e. 'mounding') but my plant has a similar habit to a large *D. brownii*. Kevin will keep an eye out and collect a flowering specimen later in the year, for Alex to decide. It will be interesting to know what colour (or colours) the flowers are and whether all plants have the same colouration. Meanwhile Kevin has taken back a piece of my plant for comparison of the leaves.

Notes on *Dryandra aurantia* (Little Darkin Swamp Dryandra)

(Editor's Note: This is good news for this species as previously it was thought to include only a few hundred plants).

I recently spoke with Les Robson re *D. aurantia*. He has actually found 2 more populations one 700+m north of the original one in the same type of habitat and a much bigger one 5 kms north in 'Wandoo Conservation Park', in a similar habitat but with blackbutt eucalyptus instead of *Banksia attenuata*. *Hakea prostrata* is common to all 3 locations. He made the same observation re the difficulty of counting the plants but estimated 1,000+ at the Wandoo C.P. Nevertheless he has submitted a recommendation for R. & E. Status. He is going to send me a copy of it and next month I will try and arrange a trip with him and some others. Alex might like to come and I suggested we go on to Morangup as it is also in their area and they should both be flowering. I'll have to look at my notebook to see what day I collected the specimens.

In mid April Alex George and I went back to Little Darkin Swamp to follow up on the earlier discovery of the two additional populations of *D. aurantia*. We went with the CALM ranger, Les Robson who had found these populations. Anne Cochrane had been there a few days before collecting seed for her research work and, from what she'd reported, had apparently found yet another population. They are all in a similar habitat in a north-south line separated by only a few kilometres. We met up with Anne and several other people. There were seven of us in all. We visited all the populations beginning with the original, southern-most one. Anne's was another one-making four in all. The plants were flowering, though not very well and most had finished. We all helped look for seed capsules but only a handful were to be had. *D. aurantia* must be the worst seed-setter among dryandras. I wouldn't think that pollinators would be lacking. The area is in a conservation park in a large fairly undisturbed water-catchment forest. Nevertheless very few seeds are available and this alone should be a reason for it being declared 'Rare and Endangered'. Application has been made by the ranger who found the new populations. I consider his estimation of the number of plants to be too many. However he did realise that the exact number of plants can't be established. It is impossible to know whether an old plant surrounded by several is a group of separate plants or only one, connected by its underground stems. I suspect the latter. Often, I have observed that, in general, plants that sucker don't set a lot of seed.

The northern populations provided us with a surprise. The flowers, instead of burnt orange were cream with brown bracts! Pity about the name but it is too late now!

Notes from Members

From Lyndall Thorburn, Queanbean NSW.

An update on my dryandras.

Dryandra nivea is shooting well and flowered in spring after missing last year.

D. drummondii is new this season and was planted in a large tub of sand. It is thriving.

D. tenuifolia is still growing slowly and has three buds.

D. calophylla has not been my most successful plant! Grown from seed in March 1994 and now planted out for a year, it has only two leaves and appears to be just sitting.

D. formosa was bought in a 6 inch pot and planted out into a large tub. The drainage was poor and we tried to redo the tub. Unfortunately, the plant did not like being moved and has since died.

From Barbara Buchanan, Myrree, Vic.

Thank heaven we are now getting some cool nights; it has been a very trying summer. I have a lot of sunburnt plants, something I haven't seen among the natives previously. However, some of my dryandras survived, as noted below. The dryandras have so much to offer in interesting foliage that we just have to persevere and try to tame them. Some notes on my plants are given below.

My property at Myrree is on heavy soil which easily forms a hardpan. It has a 44 inch (over 1700 mm) rainfall, lots of frosts, occasional snow and sleet with days of Scotch mists. In summer, the temperature exceeds 30°C for weeks on end and it is generally dry. The dryandras are all in red soil with some areas very good although drainage is sometimes erratic due to the hardpan. Proteaceae tend to develop a yellowing of the leaves which Rodger Elliot suggested could be due to a trace element deficiency (there is no lack of iron in the soil). Scattering magnesium sulphate has improved a lot of plants and I think that those that have had more have responded best. I now plant it with everything, sometimes along with some gypsum.

D. anatona I think that the original plant came from Ray Purches from Cranbourne seed and labelled as "aff. *falcata*". It's a bit hard to trace origins with all the new names. A second plant was grown from cuttings by Ray.

The seed grown plant was taller than I am, nearly two metres, very upright despite some nipping out of tips. One of the two main branches became top heavy and caused the plant to fall over. New branches are growing upright again. There were two flowers last year and both set seed, up to 10 follicles on each which started opening on the bush. Despite falling over and some yellowing, it is flowering again this year. In fact, it was doing so well that I planted the cutting-grown plant near it but this had poor roots and is now barely one foot high after two years.

D. columnaris. This is in my "dryandra patch", an area of old pasture so there is sometimes lots of grass competition. It

attracts attention from visitors for its pale grey foliage, furriness and upright habit. It is about one metre tall with more stems coming from the base than in *D. anaton*, making it more bushy in appearance. It has not flowered yet but is a wonderful foliage plant.

D. lepidorhiza. Several plants were grown from Study Group seed as *D. Kamballup*. They were planted in a watered area in late autumn, 1994, but have not been really healthy. One was a sudden death recently, possibly due to collar rot as the plant snapped off at ground level. The other, with sand added to the soil, looked poor early on but in late summer, it put out some bright red shoots. It has not flowered.

D. rufistylis. This was planted in 1993 near *D. columnaris* and has flowered. It is only small, less than 18 inches, erect and bushy, pyramidal in shape and another wonderful foliage plant. Very healthy, it does well in full sun.

D. stricta. This was raised from Study Group seed labelled "aff. *hewardiana*", sown in 1994. The two plants in the dryandra patch still show yellowing despite my magnesium sulphate treatment. Still no more than one metre, they are healthy and fairly open in growth with attractive, dark shiny leaves but have not flowered. Another plant in a different area died in mid summer.

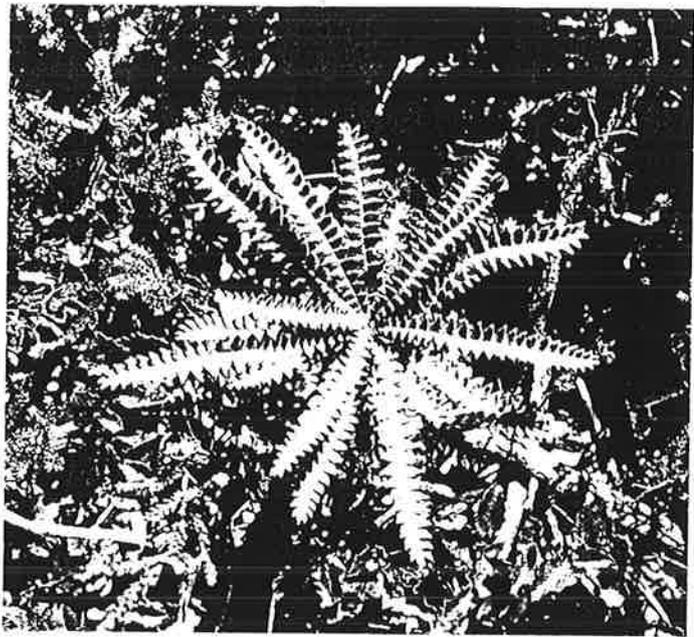
Dryandra montana : Rare and very endangered

Margaret drew my attention to this article in *Landscape*, the magazine of the Department of Conservation and Land Management in W.A. With the kind permission of the editor, I have reproduced it. Margaret tells me there are specimens of *D montana* in the Rare Flora Garden in Kings Park. They are about 1 metre tall and one flowered in February this year.

The threat posed to many of our native species by *Phytophthora cinnamomi* is all too evident from the article. This makes the work of Anne Cochrane and staff at the Threatened Flora Seed Centre (see NL 31, p 4-) all the more important in learning about the propagation characteristics of rare and threatened species.



ENDANGERED



MOUNTAIN-TOP THICKETS OF THE EASTERN STIRLING RANGE

A biological survey of mountains in the south of Western Australia, began in September 1994. It was conducted from the Department of Conservation and Land Management's (CALM) South Coast Region office and was funded by the Australian Nature Conservation Agency (ANCA). Its aims were to assess the conservation value of specific mountain peaks and to quantify threats to their ecological communities.

The survey quickly identified the eastern Stirling Range Montane Thicket as a unique community, rich in endemic species (those which occur nowhere else). These included some stunning plants, such as the giant candles (*Andersonia axilliflora*), the critically endangered mountain dryandra (*Dryandra montana*) and the mountain bells (*Darwinia collina* and *D. squarrosa*). In all, seven threatened species occur in the community.

The introduced pathogen *Phytophthora cinnamomi*, which causes dieback and is apparently

spread by walkers, is widespread along the mountain peaks. The threat posed by this pathogen was obvious—many deaths were observed in seedlings regenerating from the fire that occurred in 1991. Particularly affected were species from the heath family, such as *Andersonia axilliflora* and an undescribed species of mountain paper heath (*Sphenotoma* sp.).

A. axilliflora was proposed for threatened status, but it soon became clear that the community as a whole was endangered, with major changes in structure and species composition evident. Species that were once abundant on the Bluff Knoll plateau were difficult to locate. The old 'skeletons' of the rare feather-leaved banksia (*B. brownii*) were visible, but only one population of seedlings was located. Formerly abundant Stirling Range endemics, such as the mountain banksia (*B. solandri*) and the Stirling

Range pixie mop (*Isopogon latifolius*), whose floral display was apparent on old photographs, were now patchy in distribution. The threat posed to *Dryandra montana* was already known, with only 19 individuals being located and the few seedlings found being dieback-affected. Despite extensive searching, only a single plant of *Persoonia micranthera* has been located. Positive recoveries for *Phytophthora* were obtained from dying specimens of both *Darwinia* species, although they are considered not to be highly susceptible to the fungus.

The impact of the disease on this ecological community, with extremely slow rates of seedling growth, appeared greater in more frequently burnt areas. In such areas, a sedge (*Lepidosperma* sp.) appears to be colonising gaps in the thickets created by the disease. In areas where there was a pre-fire abundance of *Banksia* and *Dryandra* species, as deduced from the presence of burnt 'skeletons', seedling numbers from species in the family Proteaceae were low.

by Sarah Barrett
Photos - Sarah Barrett

1996-1997

What can plants put up with ?????

After a fairly normal start to the year, i.e. a January rainfall just below average, February set the pattern for most of the remainder of the year. Three days of exceptionally high rainfall helped to give February more than twice its average rainfall although there were only seven days on which it rained. Again, three very wet days made March slightly wetter than average.

April was the start of real trouble in not only being wetter than average but having rain on all but seven days for the month. May looked as though the situation might be corrected with only one third average rainfall but as it was spread over thirteen days there was little chance for things to dry out.

June was slightly dryer than average and the following three months exceptionally wet. All four months had exceptionally high numbers of rainy days with July and August both recording 23 rainy days each. This meant that there was no chance to dry out until mid December. Although October, November and December had below average rainfall, October and November had 14 & 15 rainy days respectively (rain on one out of every two days). Not really drying weather.

December, with one third average rainfall, was the start to our exceptionally dry summer and autumn. It gave the water-logged soil a chance to return to normal but the true effects of being exceptionally wet then exceptionally dry started to show up towards the end of February with a number of Dryandras & old Banksias (15-16 years old), 'turning up their toes' or should I say 'dropping their leaves'.

I heard the term 'garden reconstruction' used some months ago and thought I should apply it to my own situation (removing anything dead or causing shading or overcrowding problems). I started with the chainsaw, then the mulcher. It looks more like 'garden destruction' at the moment but at least there is plenty of light getting through and my new plants seem to have a much better chance of survival.

To the 'nitty gritty' of this report.

Although I have 16 Dryandras listed in my Growth Information, as mentioned earlier, the change from wet to dry caught up with a number of them during February and March. All those marked with an asterisk (*) were fatalities during that dry period, though not necessarily as a result of the dryness.

I have mentioned in the past how the rabbits give the *D. bipinnatifida* a rough time, well I thought I was winning when I found that the little blighters had pulled or dug out 8408, the one that flowered last year.

The *D. conferta* (9606) I listed was one of two I planted last year. The second one looked so sickly that I didn't bother to list it. In spring it made a feeble effort to put forward a couple of new leaves but I didn't hold out much hope for it. On the other hand, its mate was still looking very healthy although it died during the dry spell. The sickly plant looked like a dead twig bearing a couple of dry leaves and I was about to pull it out and replace it with another plant when I noticed two new healthy leaves had appeared. The result is I have left *D. conferta* listed in my Growth Information and hope it stays around for years to come.

The dryness killed all but one of the self-sown *D.praemorsa* seedlings and strangely enough that one has survived in the original spot without any extra care and attention or water.

The other few Dryandras that are surviving are healthy enough and the *D.formosa* we have for cut flowers look a picture. Although I get good germination from the seed of these, I rarely get plants to the planting out stage. I know the main problem is trying to keep them dry enough during the cooler months, so I am arranging with a couple of nursery friends to see how they go under their controlled situations.

With some of the Dryandras I tried a variation of Margaret's direct seeding method. At the stage of pricking out from the seed trays (I mentioned this last year), I planted a number of plants directly into the garden beds. I had them nicely protected but the dry spell beat me with all except one *D.obtusa*, a *D.pteridifolia* and a *D.formosa* which came up among the old seed capsules that I throw on the garden for mulch.

With all the losses, I have replanted with stock obtained from a friend. The source of the seed is unknown so I will need to do some botanical work later to verify species and define subspecies and/or varieties. The following is a list of those plants, which still look great, and I hope they will still be around in 12 months time.

D.arctotidis *D.baxteri* *D.carlinoides* *D.ferruginea* *D.fraseri*
D.hewardiana *D.proteoides* *D.pteridifolia* *D.quercifolia*
D.sessilis *D.speciosa* *D.stuposa* *D.tenuifolia*

I still have a few plants in pots so I guess I'll get those planted out before summer.

On the propagating side, I have had varying success. I am persisting with soaking the seed in a solution of Hydrogen peroxide and a fungicide. My spring planting gave pleasing results, although I have mislaid my records at the moment. On the other hand, germination from this autumn's plantings has been very spasmodic. The strange thing is, that many of the trays that produced no germination, now after almost 4 months, the middle of winter and almost to be thrown out, are producing seedlings. I guess nature knows what it is doing, I don't!

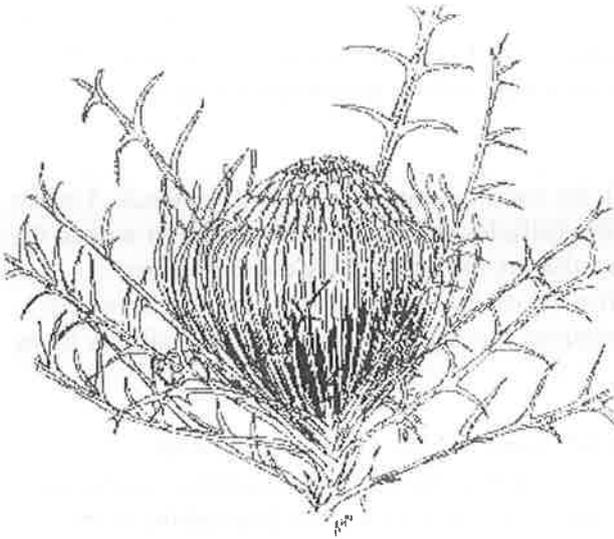
One other idea I am trying is to keep the plants in pots dry (almost) over winter by giving them long periods in my polyhouse. It seems to be working so far and if I can find time I'd like to construct a large area covered with 'poly' and open sides just for my plants in pots.

Dryandra on the Internet

Many of you will know that SGAP maintains a Home Page on the Web. The editor, Brian Walters, produces a regular online version of *Australian Plants* and also is developing a set of information pages about many of the better known genera of Australian plants. With his permission, I have reproduced the first four pages of the Dryandra article. For the next newsletter I will include some of the individual descriptions of species described in the article. The pictures which are reproduced from Margaret's slides, are fabulous when viewed in glorious living colour!

For those of you with the right equipment, the SGAP Home Page is found at

<http://www.ozemail.com.au/~sgap/index.html>



The *Dryandra* Page

- [Background](#)
- [Propagation](#)
- [Cultivation](#)
- [Selected Species](#)
- [Fire and Regeneration](#)
- [The Dryandra Study Group](#)
- [Further Information](#)
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Background

Dryandra is a genus of about 92 species and 36 subspecies or varieties in the *Protea* family (Proteaceae) and all occur naturally only in south-western Australia. The genus was created by the botanist Robert Brown based on specimens collected by him at King George Sound in December 1801 and was named in honour of Jonas Dryander, a botanist and librarian. For many years there has been confusion in the taxonomy of *Dryandra* with many species having no scientific name and others being known by incorrect names. This situation was resolved in 1996 when the genus was revised by Alex George.

Characteristics

Within the Proteaceae, *Dryandra* is most closely related to *Banksia* although the latter genus has a wider distribution and is found in all Australian States and Territories.

Like *Banksia*, the individual flowers of *Dryandra* are quite small and occur in dense clusters which can number several hundred individuals. The flowers are arranged in cone-shaped clusters, a feature which differs from the majority of banksias which have the flowers arranged around a vertical axis, giving the familiar cylindrical inflorescence (*Banksia* subgenus *Banksia*). The flower spike of *Dryandra* is superficially similar to the three *Banksia* species in the sub-genus *Isostylis* which would not be recognised as banksias by most people. These three species may be an evolutionary

link between the two genera.

The flower heads are also surrounded by overlapping, scale-like bracts which often form a conspicuous part of the inflorescence. These bracts are absent in *Banksia*.

The flower clusters of most *Dryandra* species are cream, yellow, brown or orange in colour. There are one or two species where the inflorescence can have a pink colour in certain forms (eg. *D.praemorsa*, *D.fraseri*).

The flowers are followed by more or less woody follicles each containing one or two seeds. Unlike *Banksia*, where the follicles develop on large cones, the follicles in *Dryandra* are hidden within the spent flower clusters. In the majority of species these follicles remain tightly closed unless stimulated to open by heat, such as following a bushfire, or on the death of the plant. With a few species, the seed is released annually. The seeds themselves have papery wings which allows them to be distributed by wind.

Most dryandras are small to medium shrubs but there are many which are prostrate with underground stems. At least one species (*D.arbiorea*) is of tree proportions. A number of species have a "lignotuber", a woody swelling at or below ground level from which regeneration of the plant can occur if the above ground stems are destroyed.

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Propagation

Most dryandras are propagated by seed but vegetative propagation (eg. cuttings) has been successfully applied to some species and is, in fact, often necessary to enable desirable forms and flower colours to be maintained.

Seed

With those species with woody follicles, extracting the seeds usually requires heat (eg in an oven for about 20 minutes at about 150 degrees C). This forces the follicles to open and the seed can often be shaken out. Sometimes, however, the follicles do not open sufficiently and it may be necessary to repeat the heat treatment. With species having softer follicles, the seed may be removed by cutting the follicles along the top with strong scissors, thereby enabling the two sides to be prised open.

Seed usually germinates well by conventional sowing methods in seed raising mixes although seedlings may be subject to "damping off". To minimize this possibility, keep seeds moist but not wet. The best time for sowing probably depends on the grower's location. It has been suggested that early autumn is a good time for most areas but early spring may be best for areas which experience cold, wet winters. Germination should occur in 21 to 60 days, depending on the species.

Pre-germination of seed by sowing into a closed container containing moist vermiculite or a similar material is also a useful method of germinating seeds, particularly for winter sowing when outdoor temperatures may be unsuitable. Germination usually occurs in 2-3 weeks using this method and

when the root has reached about a centimetre or so in length, the seedling can be placed into a small pot of seed raising mix.

Cuttings

Dryandras which are propagated from seed may show variation in flower colour and growth habit from the original plant. In order to preserve desirable plant characteristics, propagation by cuttings is necessary.

Dryandras are not the easiest plants to propagate by cuttings but it is certainly not impossible. A few are fairly easy (*D.fraseri*, *D.lindleyana*, *D.tenuifolia*, *D.formosa*, *D.squarrosa*). Cuttings about 75-100 mm in length with the leaves carefully removed from the lower two-thirds seem to be satisfactory. "Wounding" the lower stem by removing a sliver of bark and treating with a "root promoting" hormone may improve the success rate.

Cuttings of some species may be slow to strike (6 months or more).

Grafting

Because of the difficulty of growing dryandras in humid summer areas (see "Cultivation"), some experimentation has been done, mainly by amateur growers, on the grafting of dryandras on to hardier root stocks, usually *Banksia* species. To date this work has produced only limited success.

General Propagation

Further details on general plant propagation can be found at the Society's **Plant Propagation Pages**.

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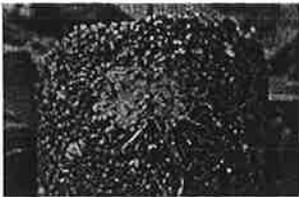
Cultivation

Although dryandras are desirable garden plants they have not achieved the same degree of widespread cultivation as banksias. This is undoubtedly due to the fact that their natural habitat makes them difficult to maintain in cultivation in the heavily populated areas of the Australian east coast. Some success has been achieved with species such as *D.formosa* and *D.praemorsa* in inland New South Wales and Queensland but the genus is not particularly reliable in coastal areas of those two states. On the other hand, good results have been achieved with a range of species in Victoria and in the south-east of South Australia, particularly in sandy, well drained soils. Generally the genus can be regarded as very suitable for areas with a Mediterranean-style climate with wet winters and fairly dry summers.

There are several species which can be grown to flowering stage in less suitable districts. These include *D.praemorsa*, *D.tenuifolia*, *D.pteridifolia* and *D.fraseri* but even these should not be regarded as long term garden plants in these areas.

With many different forms, growth habits and flower colours, dryandras can be used for many different purposes in the garden. In addition, the flowers of all dryandras produce nectar and are excellent for attracting birds.

Like most members of the *Protea* family, dryandras have a distinctive root system ("proteoid roots") consisting of tight groupings of many small "rootlets". These are believed to enable the plants to more efficiently take up nutrients from the nutrient-deficient soils where many of the species occur naturally. In cultivation this means that the plants can be adversely affected by fertilizers, particularly phosphorus. It is generally recommended that dryandras and other Proteaceae be fertilised only with low-phosphorus, slow-release fertilisers or not be fertilised at all.



Proteoid roots can often be seen by carefully removing a proteaceous plant from its pot, as shown here. Select the thumbnail image or the highlighted phrase for a higher resolution image (39k)

In cultivation all species perform best in well-drained soils and generally resent continually wet soils. Shallow clay soils can present problems but if garden beds are built up to 300-600mm, greater success is experienced. Dryandras are generally at their best in open, sunny positions although the plants will tolerate some shade but probably with reduced flowering.

Like many plants, a number of *Dryandra* species are susceptible to the root rot fungus, *Phytophthora cinnamomi*. This has caused serious environmental problems in some natural stands of native flora (including banksias and dryandras) in Western Australia. The most dramatic effect of *Phytophthora* is the sudden demise in a matter of days of an apparently healthy plant. Improvement of soil drainage is the best means of minimising attack in areas where *Phytophthora* is known to exist.

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DRYANDRA STUDY GROUP

SUBSCRIPTIONS FOR 1997 - 1998

The group's year runs from July 1, 1997 to June 30, 1998. Subscriptions are \$6.00 for Australian members and \$10.00 for overseas. Please make cheques payable to the Dryandra Study Group and forward to Margaret. Thanks to all those who have already paid.

Name: _____

Address: _____

COMMENTS OR SUGGESTIONS FOR INFORMATION:
