

DRYANDRA STUDY GROUP NEWSLETTER NO. 57



Dryandra cuneata
Prostrate form

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ASSOCIATION OF SOCIETIES FOR GROWING
AUSTRALIAN PLANTS

***Dryandra cuneata* Prostrate form**

D. cuneata is normally a large, rather straggly shrub in its northern range and a smaller, more compact and floriferous form nearer the south coast. This prostrate form grows in a very exposed coastal heathland, east of Esperance. It grows true to form from seed and flowers over a long period, usually twice a year in my garden.

DRYANDRA STUDY GROUP

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Hello and welcome for the second Newsletter for 2009.

Well, the last six months have proved something of a trial for our gardens but apart from a couple of very old plants, so far I have not lost any dryandras. I think that the secret has been that plants were able to establish "in the good times" when we had reasonable rainfall and produced good root systems which have stood them in good stead over the drought years. Anyway, I have decided to bite the bullet and put out some young dryandras this autumn into the garden and see if I can get them through the next summer. I am paying a lot more attention to deep watering by using two sections of corrugated drainage pipe about 60 mm in diameter and burying them vertically to about 180-220 mm on either side of the plant. These are filled regularly, even over winter our nominally "wet" period, to keep the soil down below moist and encourage root growth. I will let you know of my successes (or failures) this time next year.

You will notice a few changes to the newsletter, mainly with a few more illustrations albeit in black and white. We are still not in a position to cover the cost of having a colour Newsletter even though some Groups like Acacia, Banksia, Correa and Isopogons and Petrophiles do. I have a program on my computer which enables me to produce "greyscale" images from colour and these are what you see in several articles. Let us know what you think. We still have the full colour page, thanks again to David Lightfoot for producing it for us, and Margaret for supplying the pictures. The second idea is to have a regular article in each issue on people's favourite dryandras. I have started the ball rolling with *D. longifolia* but we would like you to tell us about yours – I'm sure that everyone must have species that are very successful for them or they especially like. Just a few paragraphs will do to tell us why the plant is special, with pictures if you have them but we can probably cover this aspect from the *Dryandra* Digital Collection.

Margaret continues her series of "Looking Back" and it is interesting to see how difficult it was in the early days for us for us to distinguish between the many *Dryandra* species. We have all learnt but her belief that there was a problem with the way that some prostrate rare and endangered species were counted seems to be borne out with scientific research which shows that far from there being "hundreds" in some populations, there are only a small number of clones with apparently new plants actually growing off the underground stems of others. She also reports on the very unwelcome news of *Phytophthora* spreading further from the Stirlings into new territory along the *Dryandra* haven Woogenillup Road. I have prepared a summary of *Dryandra* germination times for many species based on the records of King's Park and include pictures of typical seeds from a new book on Australian seeds. There is also a report on my growing from seed over the last two autumns.

Finally thanks to members who have submitted letters and reports for the newsletter. It is pleasing that we have several overseas who are persisting with the daunting task of growing Australian plants in pots in glasshouses through very severe winters although for Liesbeth, failure of a heater at a crucial time spelled disaster. We always welcome information on any aspect of growing dryandras so please let us know how you are faring. Also, it is that time of year again and subscriptions for 2009-2010 are due. Please complete the form on the back page and return it with payment to Margaret. Thanks to those who have already paid.

All the best for a green spring and happy *Dryandra* growing.

Tony

Looking Back (continued)

From a letter to Keith Alcock, Study Group leader, in Victoria dated 16/12/85, from Margaret Pieroni in Perth. Updates of names and other comments are in brackets in italics.

.....I'll be happy to go on taking photos for you. I'm pleased that they are of use to the Study Group. I have personally benefited a great deal from your information, both in our correspondence and the newsletter and, as I've told you I've found the leaf prints especially valuable.

Now that I am able to drive my own car, I've been able to do several trips to collect verticordias and dryandras and I always enjoy the trips immensely. I've been organising our Wildflower Society excursions (*with Kevin Coate of 'Coate's Wildlife Tours'*) to take in the dryandra areas – as you've probably noticed. If anyone else has they haven't complained yet!

I was sorry I missed you when you were here. It seems to have been a real 'comedy of errors'. When you arrived, I was at the Stirlings and we (*Wildflower Soc.*) left for our Frank Hann National Park trip on Monday 14th. We were at Middle Ironcap at mid-day on the 15th and returned to Perth on the 18th. We didn't actually go into Harrismith but went south west to follow the road that follows the railway line and water pipe-line through Toolibin. So we obviously missed the dryandra areas that you mentioned. I'll certainly try to get there next year, though – perhaps on our way back from our excursion with Kevin Coate. We intend to go to the Stirlings for the long weekend, (the last one in September) and go on from there as far as Hopetoun to visit the eastern end of the Fitzgerald River National Park and perhaps further east before returning on a more northerly route at the end of the week.

I gave a talk on our excursion at the Wildflower Society's Christmas meeting with some of the slides I took this year. Quite a few of them were dryandras and I explained that I'm taking them for the Study Group as well as for myself. I've offered to give a talk on dryandras next year. I won't have all the species by any means but I think they'll be more interested in seeing the ones I'm growing and some that we've seen on our excursions. Eventually, I'd like to have a complete collection of slides. I'm very happy with the way I'm learning to identify them, one by one – as I find and photograph them or as I get details from the Study Group.

I am pleased with the Fujichrome film. I hadn't seen the slides on the screen and, standing on the stage, it wasn't easy to see them but I heard some oohs and aahs and several people complimented me on the slides. Next time I give a talk, I'll stand in the middle of the hall so I can see them properly.

When Elizabeth and I were on our trip last July she was in touch with Alex George in Canberra so I was able to get instant identification of the dryandras we were collecting. Now that she is there I miss her and our collaboration on the Verticordia project over the last six years. We keep in touch and I now have a 'hot line' to the dryandra expert! Alex would like specimens of dryandras sent to him directly at this stage as he is hoping to have all the dryandras and verticordias described by the middle of next year. He and Elizabeth will be coming to WA next year on a dryandra field trip.

I was interested to know that the Hatters Hill dryandras (*D. viscida*) were still in flower when you were there. It was disappointing for me not to find any. What were the plants like? The ones we found on the slopes of Middle Ironcap were small and straggly but the ones at the bottom, about a km. down the road were beautiful, dense mounds, as you can see from the slide – very much like the two different forms of

D. nivea. (At the time, we thought that *D. lindleyana* and *D. nivea* were the same species with different forms)

Getting back to next year's excursion – I'm hoping to see *D. obtusa* somewhere and I wondered if you'd have an exact location you can give me so that I can photograph it? I'll definitely look for sp. J (*D. meganotia*), and if necessary do a bit of gardening around it to remove the weeds, with help from the others – it wouldn't be the first time! (Keith had given me a location for this one, near Harrismith on a weed-infested roadside)

Thank you for sending the specimens for me to look at. I'll look forward to seeing them in situ one day. I've made a careful note of their locations and will get some detailed maps to mark the spots for future reference.

My trip to the Stirlings two weeks ago was very enjoyable and successful. The weather was not good – as usual, there but though it was mostly cloudy, the light was good enough for my photos.

We drove into the gravel pit on Salt River Road which had delighted us a month before and I was thrilled to find the *D. drummondii* (subsp. *drummondii*) in full flower, some plants having a mass of flowers at the base of the leaves, packed so tightly that there was no space between them. The 'giant' *plumosa* (*D. pseudoplumosa*), was in full flower, as well. Later, we saw the 'normal' *plumosa*, further south in the Stirlings (*D. plumosa* var. *denticulata*) with no sign of flowers. It blooms in winter or early spring, doesn't it? I photographed a late flower in the Fitzgerald in October, last year (var. *plumosa*), so the Salt River form is different in that respect, too.

My friend, Shirley Loney, who accompanies me on these trips is becoming interested in dryandras, too. She came with me earlier this year to the Lupton Reserve to see *D. proteoides* and it was she who drew my attention to the *D. seneciifolia* (*D. columnaris*) flowers at Boyagin Rock Reserve.

We drove along Stirling Range Drive to where I had photographed what I thought was *D. foliolata*, in October but when I looked at the slide (which wasn't any good anyway); it didn't look like the right foliage. When we got to the plants, this time, I noticed that the one I'd photographed did seem to have longer, narrower leaves than the others, especially near the top of the plant but they were *D. foliolata*, nevertheless. Some leaves were twice the width of others on the same plant.

The next day, we had another look at the *D. calophylla* on the southern boundary of the National Park and I took some shots of the flowers. Further south, north west of Albany, Alex had told me where to find *D. squarrosa* (not separated from *D. carduacea* at the time), which we found and *Banksia goodii*, which we didn't. The new foliage of *D. squarrosa* was very sticky. Is this common to the whole group including *D. carduacea*?

Shirley and I are planning a trip to the south coast in February. I would like to get some photographs from which to paint landscapes. Paperbarks growing around estuaries make good subjects. On the way back we are going to stay with friends at Ongerup and do some trips into the Fitzgerald River National Park in their 4WD. I will look for *D. vestita* in flower. Perhaps some other species will be flowering then. When does *D. cynaroides* flower? I'm hoping to find *D. erythrocephala* flowering and it would be good to see both to compare them.

Last time he was here, I asked Alex to pinpoint *D. mimica* at Orange Grove in the Perth street directory. He told me that the roadside plants have been scraped. I have a location for a population

west of Mogumber. (At the time, only three widely separated populations were known; Mogumber, north of Perth, Orange Grove, east of the city and south of Busselton, in the Whicher Range area. Since then, other populations have been found, mainly in the Mogumber – Wannamal area).

Sue Patrick from CALM rang me a few days later to see if I knew where to find *D. mimica*. She was going to check the Orange Grove plants and as I was planning a trip to Mogumber, I volunteered to count the plants there. They are considering *D. mimica* for Declared Rare Flora status.

Last Saturday, with Shirley and other friends, I drove up Brand Highway to West Wannamal Road, along it to the Wannamal – Mogumber Road. *Verticordia nitens* is spectacular along there and at the far end we saw *Anigozanthos pulcherrimus* 'en masse'. It was a breathtakingly beautiful drive.

From Mogumber, we drove west on Mogumber West Road to the spot where we were to look for *D. mimica*. We couldn't find any plants on the road verge but there was a small patch of reasonably undisturbed bush in a corner of a farm property and, just as we were beginning to despair of finding it, I found a plant. (It is a hard plant to spot, being so small and with dull green, narrow leaves, similar to *D. lindleyana*). We found a few more plants once we had got our 'eyes in' and one was in bud so I was able to get a photo. (Greg Keighery is going to look at the Whicher Range population and Sue has told me that she went to Orange Grove and found the scraped plants re-sprouting but the area is due to be cleared for a turf farm).

We found *Dryandra* sp.B (*D. echinata*) along the same road about 5km. from Brand Highway. There is more massed *Verticordia nitens* near Regans Ford and on the way back we called at the home of Wildflower Society members, west of Gingin where we were invited to pick as much of it as we could. My house looks very "Christmasy" just now with vases full of brilliant orange flowers. My *Banksia sceptrum* is flowering, too.

As to the new verticordias being discovered; at our November Wildflower Society meeting one of the keen growers had some plants for sale. One with small, pink flowers looked odd to me. I bought one and when I looked at it closely I realised that I hadn't painted it. The man had collected cutting material and grown it but hadn't seen it in flower in the wild and hadn't sent a specimen to Elizabeth. I sent her a piece of mine and she rang me from Canberra with the news that she and Alex were 'stunned' – another 'new' one! (*V. sieberi* var. *curta*) I arranged for a collector at Newdegate to collect it. She found about 100 plants where, luckily, the man who found it had recorded it, about half-way to Lake King on both sides of the road. So there are possibly many more verticordias hiding out there and who knows how many dryandras? In my opinion Rob Sainsbury was too impatient to get his book out and there will be many more species to include in a definitive book. Rob's book seems to be selling well among Wildflower Society members. At least, I suppose it will spark some interest in the genus.

I still have one plant each of *D. aff. pteridifolia* 'Newdegate' (*D. pteridifolia* subsp. *inretita*), *D. arctotidis* and *D. preissii* in very large pots under 50 per cent shade cloth, from the seed you sent me. They look like surviving – so far, at least.

In April, I bought a plant from Morande nursery that they insist is *D. runcinata*. (The old name for *ferruginea*). It is thriving in the garden but I'm not convinced it is *D. ferruginea*. On the other hand, I can't think what else it could be. Time will tell, I guess. (It was *D. ferruginea* subsp. *pumila* which we still hadn't found in the wild. The plant grew and flowered well right up until I sold the house in 2004). We called in at the nursery near Narrikup during our last Stirlings trip and I bought

a prostrate *D. tenuifolia* and one un-identified one from around Eneabba. I'm almost certain it is *D. shuttleworthiana*. A couple of weeks ago, John Colwill showed *D. drummondii* on his TV Gardening program and recommended it. Unfortunately, he called it *D. calophylla*. I suppose the nurseries are all calling it that.

I'm just looking at Tony's article in *Australian Plants* Vol. 13 page 88 on *D. drummondii* and *D. calophylla*. Is the photo of *D. calophylla* correct? It looks more like *D. drummondii* to me though not exactly like the Stirlings form that I have in my garden, (*D. drummondii* subsp. *drummondii*) which in turn looks different from the Dongalocking one. (*D. octotriginta* – this serves to show just how confused we still were as to the identifications at that stage)

My slides have arrived today (17th). I've been comparing the flowers of Salt River Road 'plumosa' (*D. pseudoplumosa*) with the print I took at West Mt. Barren, last year. (*D. plumosa* var. *plumosa*). The feathery bracts are much longer and finer on the latter. You can see what the feathery bracts and floral leaves are like on the Salt River Road form from the slide of a bud which was on the top of a plant about a metre high in the gravel pit. Some of the plants are huge and can be seen in the distance in the slide I took in October. They were at least three m. high, if I remember correctly.

I can see why I was confused about the *D. foliolata* slide that I took in October. In such an extreme close-up, only the narrow leaves surrounding the flower heads can be seen.

Thank you for your offer of slides from the Study Group collection. I may take you up on it if I have difficulty finding some species in the future. Meantime, I'm enjoying tracking them down one by one. There's nothing like seeing them 'in the flesh'. Sometimes close-up photos can be deceptive – but necessary for some dryandras, for example: *D. seneciifolia*.

I have painted about 80-90 verticordias, all actual size which we hope will be useful for identification but they are not easy. I have only had to paint one or two which are not like the type specimens. Some of them, like *V. grandiflora* and *V. brownii* are separated into new species and there have been quite a few others separated out from the already described ones usually on the basis of staminode shape or other subtle differences. This is why I feel there will have to be more separated *Dryandra* taxa like the two forms of *D. plumosa* at the Stirlings – but I am only looking at them superficially and don't have much botanical expertise!

To be continued

Letters and notes from members

(From Kevin Collins, Mt. Barker, W.A., July 2009)

My *D. prionotes* has been flowering and I forwarded pictures to Margaret. It has three flowers to date with a further one in bud but there is no clear sign of much pollen on the presenters. This is the plant I grew from a root cutting. I have a second one established but it is yet to flower. It will be interesting to see if I get any pollination.

Generally my dryandras are flowering extra well this season. *D. nivea* subsp. *uliginosa* is packed with flowers, likewise prostrate *cuneata*, *fraseri* var *fraseri*, *insulanemorecinta*, cascading *tenuifolia*, *drummondii* subsp. *hiemalis*, *longifolia* var. *calcicola*, *platycarpa*, *ferruginea* subsp. *flavescens*, *quercifolia* and *praemorsa*.

I have finally got some *D. preisii* established and growing well (yet to flower). Also, one *D. erythrocephala* is going okay. My sole *D. mimica* flowered about a month ago. The plant resembles those in the wild - looks half dead. (This is a very strange species!).

(That is very exciting about growing *D. prionotes* from root cuttings, Kevin. Please keep us informed of the plant's progress. It is a pity that it does not appear to have pollen, meaning that the species could become extinct, as several *Dryandra* taxa may do in the future, because of their specific and peculiar biology. See Margaret's note later in the Newsletter - Ed.)

A very sad story.

(From Liesbeth Uijtewaal, Neer, The Netherlands)

(Editor's note: I have had several emails from Liesbeth since January relating to the disaster she suffered when the heating in her greenhouse failed during a very cold spell in January. I must admit that I had no idea that it could get so cold in her area and I think that it is remarkable that she has been so wonderfully successful in growing Australian plants under such adverse conditions. It is also great to see that far from deterring her, the disaster has only spurred her on to rebuild her collection. Here in her own words is what happened.)

We, living in the south-east of the country, had a very cold spell a couple of weeks ago: 7 days of -18 °C at night, 'warming up' to -8 °C at daytime! This was partly caused by a 10cm snow cover which reflected any heat that reached the ground. The rest of the country didn't suffer as much as we did even though it was cold enough to allow a lot of ice-skating. And to allow for many busy days at the hospitals!

Unfortunately the heater in the old greenhouse gave up for some time during that cold period so I lost many plants. Quite a few banksias are starting to show damage now, the lechenaultias dropped dead instantly. Many Myrtaceae are rather crispy now too, even *Beaufortia decussata* from the Stirlings which I thought should be able to withstand some frost. (January 22).

The dryandras are quite slow at showing signs of damage but by and by they're dropping dead too. *D. praemorsa* was very quick whereas *drummondii* ssp. *hiemalis* did not go crispy until last week. *Drummondii* var. *drummondii* still looks OK though and so does the oldest *D. obtusa*. The one year old *obtusa* seedlings dropped dead. The one *D. erythrocephala* that I managed to keep alive for 4 years froze to death as well which is rather sad. And there are more casualties which I won't mention! Cross fingers there will be some dryandras and banksias (and other plants) left in a couple of months' time. (March 3).

Yes, the cold period in the greenhouse has been very disturbing indeed. I have no dryandras left, most of the banksias dropped dead and all the small plants, many of which I collected during my stay in Victoria. In all it was over 700 plants, ranging from up to 1 litre pots (more than 400) to 40 litre pots (8-10 year old banksias, melaleucas, one *Regelia velutina* and callistemons). Sigh. For replacements, I decided I'd concentrate on banksias and some dryandras, clumping ones mainly like *D. drummondii*, *D. ferruginea* and *D. obtusa*. I've got more than 300 Banksia seedlings now, over 50 species not counting the different varieties. That'll keep me busy for some time! Fortunately over the years I sold or gave plants away so at least I can take cuttings from the plants I miss most to replace the dead ones. It's lovely to go through someone's collection and find some dearly missed friends and take cuttings from them!

Surprisingly my 9 year old *B. ornata* survived the cold (Kevin (Collins – Ed.) was very surprised!) and 10 year old *B. media* is producing a couple of green shoots amongst the dead ones. I have no idea what it will look like in future but I definitely won't dump it on the compost heap or rather feed the stems to the shredder and chop the root ball into little pieces. It took me about a month I think to dispose of all the frozen plants. All *B. spinulosa* survived apart from the dwarf ones and *B. cunninghamii*, the Stirlings *B. brownii* did as well as several forms of *B. marginata* and *B. integrifolia* (with difficulty), including var. *compar.* *B. robur* is reshooting from the lignotuber. Such a shame, it was flowering for the first time after 7 years!

I reckon it has been down to -10 or -15 °C in the greenhouse for three days with maximum day temperatures around -4 °C. So, pretty cold! (July).

(I am amazed that the eastern banksias survived temperatures which must be well outside what they experience in their natural habitats. This would be a great research project for a Ph D student (Ed.))

(From Zdenek Pompl, Plzen, Czech Republic) (from an email to Margaret)
Of the last seeds from you, *D. idiogenes*, and *D. bipinnatifida* subsp. *multifida* have still not germinated after 9 weeks. I hope that some seedlings will germinate soon.

I am sending you some photos of my plants. As you can see, I have a small greenhouse and I would like to grow mainly Australian plants in the future. (I also have some succulents from Madagascar and Socotra). My Australian plants are still small and slow but I hope that they will continue to grow. Last week I finally obtained from Australia the fertilizer "Scotts Osmocote for Native Gardens" – I will see if it is helpful.

(Zdenek, it is great that you are growing dryandras and other Australian species in Plzen and I hope that they continue to do well for you. I very much admired your lovely glasshouse set-up and have included a couple of pictures below so that other members can also see it).



(From Catriona Bate and Phil Trickett, Canberra, June 2009)

Letters to the Editors: *Dryandra* and ducklings



Dryandra formosa Photo by G. McEwin

Dear Editors,

Thank you for producing the enjoyable Friends Newsletter. We were however quite taken aback to see the article '*Banksia heliantha* once known as *Dryandra quercifolia*' in the November edition. Contrary to the reference to 'recently accepted name changes', there is no widespread formal agreement on a change to the naming of dryandras.

We are members of the ASGAP *Dryandra* Study Group, and as you might expect, this topic continues to be widely discussed within the Group. In our August 2008 newsletter, eminent Australian botanist, Alex George, advised that there are no grounds to make the change. Having studied these plants for almost 50 years, Alex is satisfied that there are characteristics which distinguish *Dryandra* from *Banksia*, and that the new information confirms their relationship, rather than the opposite. He believes that Mast and Thiele's analysis has actually confirmed that previous botanists were on the right track—that dryandras probably evolved out of banksias. He argues that DNA analysis and cladistics should not be followed blindly, and that taxonomy should be based on readily observable morphological characters.

We also checked the online records of various herbaria around Australia, and could find no evidence that any wholesale change has been made. Alex George notes that the Australian Plant Census has no formal status that requires it to be followed.

We suggest that the impression given in the last edition (that the name change is widely accepted) should be corrected.

Catriona Bate and Phil Trickett

Dear Editors,

We are writing in response to the letter from Catriona Bate and Phil Trickett regarding the taxonomy of *Banksia* and *Dryandra*. It is pleasing to see that plant taxonomy and nomenclature can generate such interest!

In response to specific points raised in the letter, we agree that there is no 'official acceptance'



Banksia baxteri Photo by D. Greig.

of any changes to plant names or taxonomic concepts. Individuals may choose to follow a particular change based on available evidence and their own personal preference. No one is compelled to adopt the concept of an expanded *Banksia* (including *Dryandra*) or any other taxonomic changes. The 'recently accepted changes' referred to in our article in the November 2008 issue of the Friends of the ANBG Newsletter are name changes reflected in the Australian Plant Census (APC). APC represents the consensus view of Australian state and territory herbaria, as ratified by the Council of Heads of Australasian Herbaria (CHAH). The most recent advice we have received from the major Australian state and territory herbaria, including the National Herbarium of Victoria, Melbourne, indicates they have adopted the concept of an expanded *Banksia* (including *Dryandra*) as presented by Mast & Thiele (2007). However, there is inevitably a time-lag between the adoption of names and/or concepts and their application to collections (both herbarium and living plants). As a result, these changes may not appear in databases associated with these collections for some time, until all specimens have been amended and the electronic data updated.

For those seeking more information on these name changes, see the following article on the Western Australian Herbarium's *FloraBase* website: <http://florabase.calm.wa.gov.au/articles/dryandra-banksia/>

Brendan Lepshi, Anna Morrow,
Murray Fagg

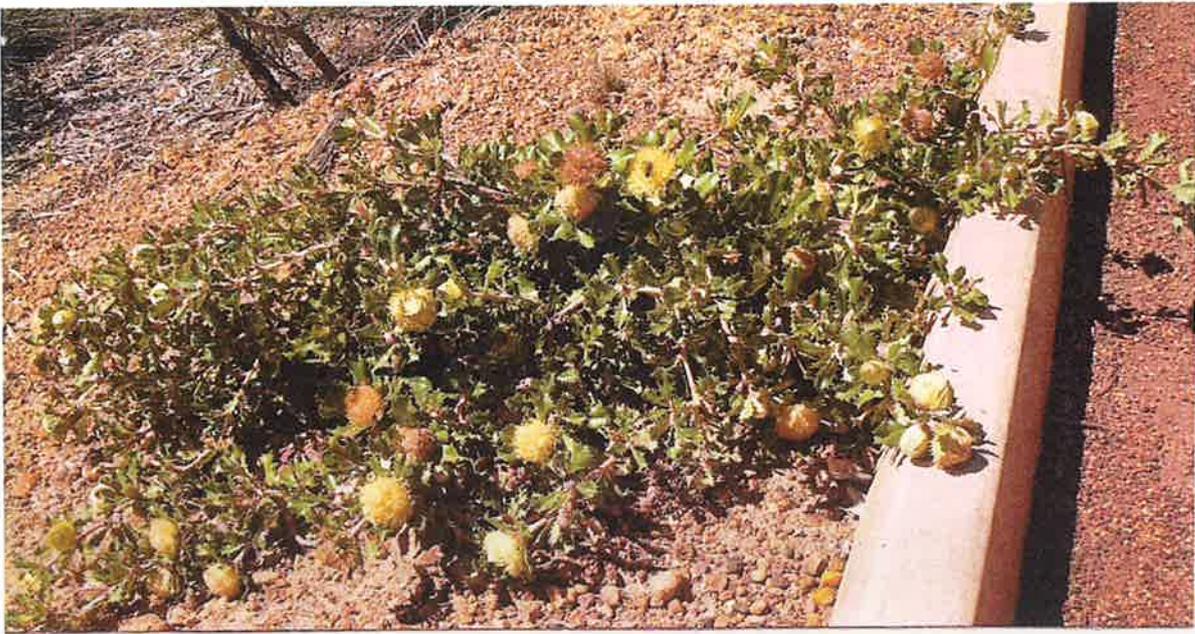
Dear bird lovers,



Photo by Margaret Clarke

A pair of Maned Ducks, living near the large pond below the café, had ten babies on Monday and by Friday they were trekking about with 17! They nabbed some from someone else I would assume? As far as I know they only start wandering once all the eggs have hatched, so for more to appear they must have got them from someone else, or found them abandoned. At times a second pair of adults were hanging around on the fringes, so I don't know whether these were the second parents, or whether it was just a coincidence. Hopefully more of these ducklings will survive than the single duckling that survived from a hatching of eight babies in spring.

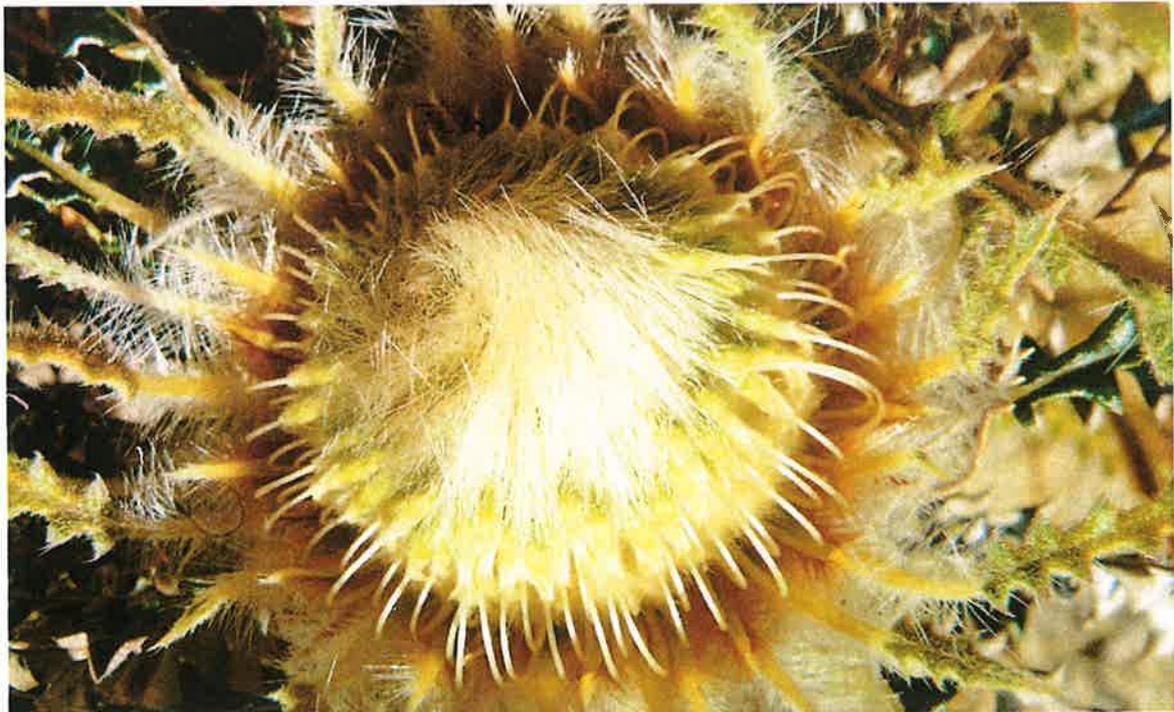
Paul Tyerman



Dryandra cuneata prostrate
form. In cultivation,
Denmark April



D. pseudoplumosa
In cultivation, Denmark
December



Germination Times for Dryandras

When I was recently staying with my daughter in Mildura, she showed me a recent book entitled *Australian seeds: a guide to their collection, identification and biology*, edited by Luke Sweedman and David Merritt and published by CSIRO Publishing, 2006. The authors are associated with Kings Park and the Botanic Gardens and Parks Authority of Western Australia and the book has masses of useful and practical information about all aspects of seeds and their collection and growing. As Margaret indicates elsewhere in the Newsletter, she was fortunate to be able to go on a collecting trip with Luke Sweedman and I am sure that this was mutually beneficial, especially in ensuring that the collected *Dryandra* seed was correctly named. Two sections of the book particularly interested me – the very large number of excellent photographs of seeds at magnification which are extremely helpful with identification (some examples for *Dryandra* are attached) and the tables of Germination Times for various genera which are based on over 40 years of records maintained by the Authority at Kings Park. I have extracted the data for *Dryandra* and set it up in the table below. The four columns of results represent:

Mean = Average number of days for all batches

Quick = Shortest number of days recorded

Long = Longest number of days recorded

Batch = Number of batches tested

Species	Mean	Quick	Long	Batch	Species	Mean	Quick	Long	Batch
<i>arborea</i>	26	22	28	8	<i>nobilis</i>	26	19	70	24
<i>arctotidis</i>	32	19	45	3	<i>obtusa</i>	43	27	52	11
<i>armata</i>	36	30	41	3	<i>plumosa</i>	35	27	42	12
<i>baxteri</i>	32	21	39	5	<i>polycephala</i>	30	18	71	18
<i>bipinnatifida</i>	43	29	36	2	<i>praemorsa</i>	37	28	47	16
<i>calophylla</i>	39	32	62	18	<i>preissii</i>	54	49	48	2
<i>carlinoides</i>	40	25	54	9	<i>proteoides</i>	43	32	59	12
<i>cirsioides</i>	49	32	70	8	<i>pteridifolia</i>	40	31	66	17
<i>conferta</i>	44	0	0	1	<i>quercifolia</i>	37	30	47	17
<i>cuneata</i>	43	28	56	9	<i>seneciifolia</i>	44	32	52	3
<i>cynaroides</i>	41	0	0	1	<i>serra</i>	63	54	75	4
<i>erythroceph</i>	43	38	49	7	<i>serratuloides</i>	32	31	33	2
<i>falcata</i>	37	31	45	10	<i>sessilis</i>	36	30	42	2
<i>ferruginea</i>	42	31	52	2	<i>shuttleworthiana</i>	37	27	47	7
<i>foliosissima</i>	52	42	63	11	<i>speciosa</i>	55	28	79	9
<i>formosa</i>	35	24	59	21	<i>squarrosa s arg</i>	27	27	27	1
<i>fraseri</i>	31	22	47	12	<i>squarrosa s squa</i>	37	24	75	10
<i>hewardiana</i>	35	23	117	16	<i>stuposa</i>	37	24	75	10
<i>ionthocarpa</i>	94	59	129	2	<i>subpinnatifida</i>	36	0	0	1
<i>mucronulata</i>	37	30	47	13	<i>subulata</i>	45	0	0	1
<i>nana</i>	32	30	34	2	<i>tenuifolia</i>	39	35	46	4
<i>nivea</i>	41	28	56	5	<i>vestita</i>	47	41	53	2

While there are a few exceptions, it appears that the majority of *Dryandra* should germinate 30 to 45 days, or four to six weeks. This of course assumes that you have good, viable seed, something you can't always control when you purchase seed. My practice is to leave pots for a minimum of three months (say 85-90 days) before throwing them out, to try to catch those species which take a little longer to germinate. Elsewhere in the Newsletter I report on my germination for last year.

Tony Cavanagh

Raising *Dryandra* seedlings at Ocean Grove

Despite the ongoing drought, last year and this year I decided to grow some more dryandras and see if I could get them established to replace some of my older plants which are nearing the end of their useful lives. I lost my 25 year old *D. baxteri* at the start of the 2008 summer and *D. cuneata* of similar age continually has dead branches so I doubt that it will survive another summer. Somewhat surprisingly, several of my forms of *D. lindleyana* are also showing signs of stress with the drought, again with individual branches dying, and my very old *D. proteoides*, which hasn't flowered for years, also finally died. One plant of *D. formosa* was badly affected by the 46 °C heat of Black Saturday and most leaves on virtually every branch died. Yet the plant itself didn't collapse and there are a scattering of green leaves throughout the bush so I have continued to water it after pruning off most of the dead material. It has until summer to perform otherwise it comes out.

The seeds I sowed were from a variety of sources – from my own seed from my garden plants, from Kevin Collins of Banksia Farm, from the Study Group seed bank via Margaret and from old packets I found when I cleaned out a cupboard. One of these was most interesting, *D. drummondii*, winter flowering, Bindoon, sent by Margaret in the 1980s so the seeds were probably over 20 years old. I sowed between 4 and 8 seeds of each species in late April or early May in my standard mix of 90% coarse washed sand with 10% peat moss or palm peat. The seeds were lightly covered with coarse seed to minimise rain splash as I always leave my pots fully in the open in a north-facing position.

Some seed did not germinate – *D. speciosa*, several of the packets marked ?*D. nivea* while I only got one seedling from *D. preissii*, *D. conferta* var. *conferta* (grey leaf), *D. ferruginea* s. *chelomacarpa*, *D. nobilis* subsp. *fragrans* and *D. epimicta*. The overall germination times are listed below. One of the “stars” was the Bindoon *D. drummondii* which is now called subsp. *hiemalis* with a strike of 4 plants from 6 seeds! So I have learned, don't throw out any old seed of *Dryandra*s, plant them out as you never know what might happen. The potting up was done in late May 2008 and mid June 2009 and so far I have had no losses. In the past, I have also sown seed in September and potted up in October/November. The seedlings grow more quickly but losses can be greater over summer with bursts of very hot weather.

Summary of results:

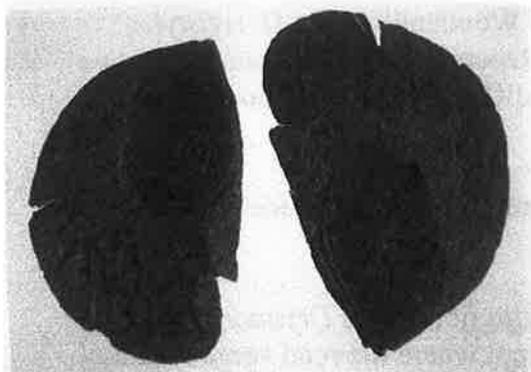
Species	First (days)	Total time (days)	Comments
<i>D. baxteri</i> dwarf	38	52	Very sensitive to drying out
<i>D. catoglypta</i>	48	-	
<i>D. conferta</i> var <i>conferta</i>	36	-	
<i>D. cuneata</i> prostrate	55	60	Seedlings very slow growing
<i>D. drummondii</i> s <i>hiemalis</i>	38	46	Healthy seedlings despite seed age
<i>D. epimicta</i>	45	-	
<i>D. ferruginea</i> s <i>chelomac</i>	55	-	Strong seedling
<i>D. ideogenes</i>	43	53	
<i>D. longifolia</i> s <i>longifolia</i>	55		
<i>D. nervosa</i>	50	65	
? <i>D. nivea</i>	56	-	
<i>D. nivea</i> s <i>uliginosa</i>	46	60	Strong plants
<i>D. nobilis</i> s. <i>fragrans</i>	55	-	Seedling growth very slow
<i>D. praemorsa</i> small flrs	31	-	
<i>D. preissii</i>	38		
<i>D. shanklandiorum</i>	46	53	

These times are somewhat longer than those reported in the Kings Park figures but their seedlings were possibly raised in glasshouses. My 2008 material was kept watered over this last summer and planted out in late April after a small amount of rain. I am watering weekly over winter to keep the soil around the plant roots moist which will hopefully allow them to develop a better root system. I will continue watering over summer at perhaps two or three times a week intervals and then stop in autumn. I will let you know of my success this time next year.

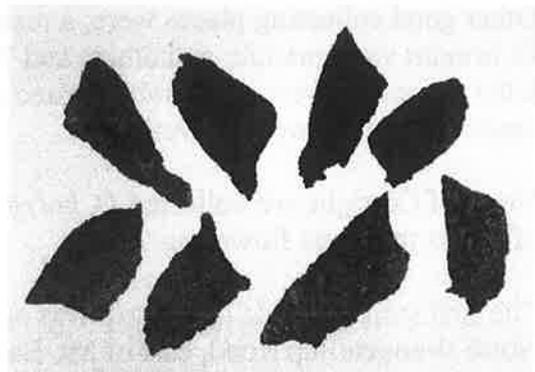
Tony Cavanagh

Some examples of *Dryandra* seed from the book *Australian seeds*

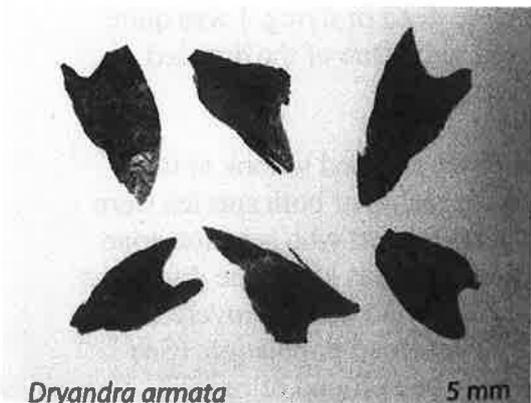
I mentioned previously that this book had a large number of images of seeds on many Australian genera. I have selected six examples of *Dryandra*, to show the variety of seed size and shape.



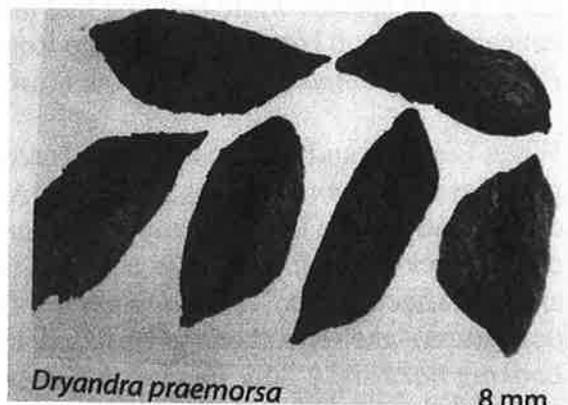
Dryandra arborea 5 mm



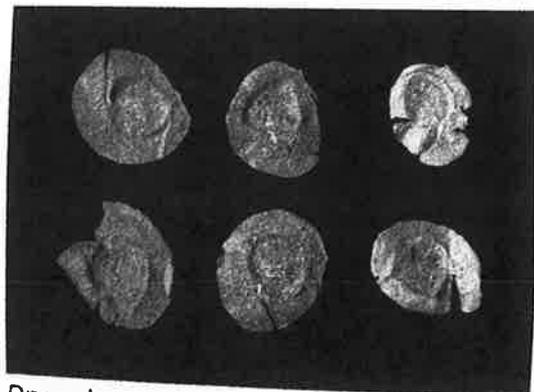
Dryandra formosa 5 mm



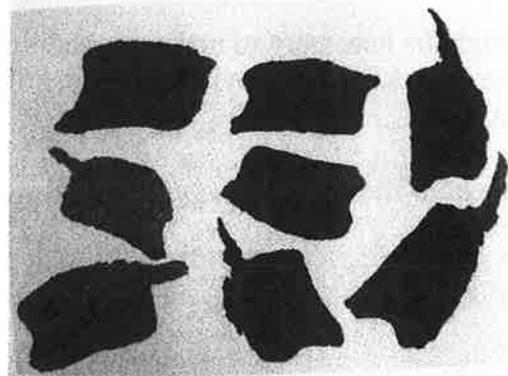
Dryandra armata 5 mm



Dryandra praemorsa 8 mm



Dryandra cirsioides 7 mm



Dryandra speciosa 5 mm

Bad News from Woogenillup

In May last year, I travelled with Luke Sweedman from Kings Park and Botanic Gardens for four days, collecting seed of *Dryandra* taxa. Many had already been collected and lodged in the Millennium Seed Bank in Kew, England but there were several on the list that had not. Rare and 'priority' taxa had been collected first.

I worked out an itinerary to collect as many as possible on a route around the south eastern section of the area where dryandras occur. We collected about 25 taxa. From Ravensthorpe we went to Jacup for *D. tenuifolia* var. *reptans* and Fitzgerald for *D. obtusa* and from south west of Newdegate, *D. idiogenes*, *D. erythrocephala* var. *erythrocephala* and *D. xylothemelia*. North east of Hyden, we drove along Soldiers Road and collected *D. shanklandiorum* and *D. conferta* var. *conferta* where Kevin Collins had taken me just a few weeks before.

Other good collecting places were; a reserve east of Woodanilling for *D. rufistylis*, *D. armata* var. *ignicida*, and others and Tutanning Reserve for *D. proteoides*. The two latter dryandras were very grub-infested and it was difficult to collect enough seed heads in the time we had available.

North of Corrigin, we collected *D. horrida*. There are two small roadside populations of plants that were flowering.

The first stop we made on the trip was on my favourite flora (read *Dryandra*) road, North Woogenillup Road, east of Mt. Barker. At a spot where the road verge widens out, there is *D. drummondii* growing with a form of *D. ferruginea* presumably subsp. *ferruginea*, which Kevin Collins had discovered fairly recently. Luke and I collected seed of both species while noticing that many plants were dead or dying. I was quite concerned though North Woogenillup Road is supposed to be free of the dreaded *Phytophthora cinnamomi*, unlike the nearby Stirling Ranges.

When Liesbeth and I drove along the road in November we stopped to look at the plants as *D. drummondii* was flowering. Almost all of the plants of both species were dead. I notified the DEC Albany Rare Flora officer, Sarah Barrett who sent someone out to check the area. The news is bad. It is *Phytophthora* that has killed the dryandras and it is affecting the *D. pseudoplumosa*, further east. Kevin had also discovered this population – the second one to be found after the Salt River Road population. (See *Looking Back* and colour picture). Other populations have been found or re-discovered since then but the species has been classed as 'Priority 4'.

It might be necessary to make a withdrawal of seeds from the bank sooner than they were expecting to – providing they can find a way of destroying the *Phytophthora* first.

The photo shows *D. pseudoplumosa* flowering for the first time in my garden, here in Denmark.

Margaret Pieroni 11/6/09

**A Favourite Plant, *Dryandra longifolia* R.Br. subsp. *longifolia*
Tony Cavanagh, Ocean Grove, Vic.**

Dryandra longifolia subsp. *longifolia* was one of the earliest grown in cultivation when plants were flowered at Kew in 1813 from seed collected at Lucky Bay, east of Esperance, by the gardener Peter Good in 1802. The botanist Robert Brown also collected specimens and described it in 1810, the name referring to its generally very long leaves (up to 30 cm). It proved a popular species for growing in glasshouses in both Great Britain and continental Europe, and plants are recorded between the 1830s and the 1850s from Belgium, The Netherlands, Austria and Italy as well as Great Britain. Colour paintings of the flowering plant were reproduced in horticultural magazines of the period as early as 1813.

Yet surprisingly, *D. longifolia* in any of its forms (there are two other sub species), is not very widely grown in Australia. In my experience, it is one of the hardiest and longest-lived dryandras, two of my plants being over 25 years old and both are still flowering well. It may help that I live near the coast as the natural habitat of all three subspecies is coastal or slightly inland, generally in dense scrub or heath, and they grow in sandy or gravelly soils often on slopes so drainage is excellent. In my experience, they do best in sun or light shade over here in the east and flower prolifically from May onwards for several months. The flower heads are on short branches closely surrounded by leaves, large, up to 7 cm across, and a brown or golden yellow. They contrast well with the stiff, dark green leaves with their rigid, triangular shaped lobes. My plants are densely bushy, up to 3 m high with a similar spread, so this is a specimen for the larger garden. One plant fell over when about five years old and when I noticed several branches growing upwards, I simply cut off the top of the shrub and it hasn't looked back. I am unsure if a single plant will set seed but with several, seed set is good and this is the best way to propagate them. I have had limited success with cuttings, for while a few will develop good roots, the success rate is less than 20%. Having lost several gutting-grown dryandras in the drought, I am more than ever inclined to grow all my dryandras from seed.

I have included a couple of pictures below, not in colour unfortunately, of historic specimens and from one of my plants flowering in June this year.



**From *Curtis's Botanical Magazine* 1813
t1582**



Specimen flowering in my garden, June 2009

Some rare and endangered dryandras

(Editor's note: The following is a slightly edited version of an email that Margaret sent to Erica Shedley who works for Katanning DEC (Department of Environment and Conservation) and is involved in research with David Coates on the biology of some rare and endangered dryandras, especially those like *D. ionthocarpa* subsp. *chrysophoenix* and sp. "Boyup Brook" which are prostrate, spreading plants with underground stems. The problem arises in counting such plants because it is almost impossible to distinguish the individuals due to the underground stems, and the thought now is that there may be many fewer plants than previously believed; in one survey, instead of hundreds, there were found to be just 16 "clones". It is great that scientific research is being applied to these rare species and I am very pleased for Margaret as she has long held the view that there were far fewer plants than was being recorded.)

"Thank you so much for the paper on *D. ionthocarpa*. I'm absolutely delighted to know that the work on these plants that I have been hoping for, for so long, has begun and that I am vindicated in my opinion that there are so few plants in the 'populations' and that they are much more endangered than was thought.

Now for a couple of other rare ones - I hope. The one we were discussing when you were here is *D. sp.* 'Boyup Brook' as I call it. (See *The Dryandras*). There may be as few as three plants of this new species. I understood that this was the one you meant when you said that you walk in to the forest north of Camballan Road. It was collected by Leigh Sage 'near Kirup' and identified as *D. aurantia*. It has leaves like *D. porrecta* and flowers like *D. aurantia*. I collected the first flowering specimen about five years ago in June (*D. aurantia* flowers in April). In the paper it says that 'individual' plants are clones with connecting lateral roots. I have always maintained that these are not roots but underground branches. Perhaps this is what is meant by 'ramets'? After fire or other disturbance, the plants resprout, not from the lignotuber but from the tips of the branches. I could be completely wrong but I would like to have this proved (or not). Basically I think that population = clone = plant. The only way to do this, I suppose would be to carefully excavate a branch or root to see whether it has roots from it. One of the rangers from Mundaring did this with *D. aurantia* some years ago after burning a plant. The year after he told me there were lots of seedlings coming up and the following year he said he had dug one up and it had a funny, very thick sort of root. I explained my theory but I got the impression that he wasn't convinced. I had a plant of *D. lindleyana* subsp. *pollostia* in my garden in Attadale. It never flowered but what looked like a seedling appeared about 40cm away. When I was collecting a specimen of *D. pteridifolia* subsp. *inretita* for Alex George, I was trying to sever the branch just below the ground when the earth heaved about a metre away in clear ground. I then dug down and cut the stem there and finished up with a specimen so big that I had to buy a garbage bag to put it in. I wanted to show Alex that it was a prostrate plant. There were no roots on the underground branch. Alex subsequently cut the specimen into several bits. I have never actually excavated a branch for enough length so as to prove my theory but it could be done with any number of dryandras that have the same habit. Perhaps a more common species like *D. porrecta* could be tried instead of *D. ionthocarpa* subsp. *chrysophoenix*? When I first found the Aldersyde population it was flowering for the first time after a fire and the plants were in great shape. I have photos to prove it. I was there last year and they were in a bad way, not looking healthy and choked with weeds. My recommendation to the Recovery Group, since subsp. *chrysophoenix* doesn't seem to set viable seed, was to consider hand pollination between populations. If you do succeed in growing some plants from cuttings or tissue culture then I agree that they should be mixed together so that when they flower they will be close enough to be pollinated naturally. The seeds of this species are unusual in that they are not attached to the receptacle but are wedged in between the petioles of the leaves. When the plants of subsp. *ionthocarpa* die, the follicles fall out and are probably dispersed by the wind to a certain extent because of the unusual tuft of hairs on the top of them. I would love to take part in any work with these and sp. Boyup Brook if it can be arranged. I have offered in the past.

You may have more success with cuttings from the underground stems even though I don't think they make roots naturally. Kevin was only able to get underground stems (roots?) to strike of another dryandra - not plant stems. It is not prostrate but we suspect that it is clonal".

Margaret Pieroni, July 2009.

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A.S.G.A.P. DRYANDRA STUDY GROUP

SUBSCRIPTIONS FOR 2009- 2010

The group's year runs from July 1, 2009 to June 30, 2010. Subscriptions are \$8.00 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 paid.

Name :

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COMMENTS OR SUGGESTIONS FOR INFORMATION:
