

# DRYANDRA STUDY GROUP

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NEWSLETTER No. 15



*Dryandra praemorsa*

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SOCIETY FOR GROWING AUSTRALIAN PLANTS

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DRYANDRA STUDY GROUP

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Welcome to 1989 and our first newsletter. The Victorian summer has been rather strange this year with relatively good falls of rain up to near Christmas together with cool days. January has been a lot drier with some very hot days. My dryandras in the garden have survived but I lost a lot of dryandra seedlings, partly because I am using a new potting mix which doesn't drain very well and partly because my small pots probably dried out on a couple of extremely hot days. These problems highlight the difficulties of growing seedlings over summer and I must admit to more success with plants raised from seed sown in March although these plants grow only slowly through our winters. What are other member's experiences with seed sowing times? Is autumn sowing better or doesn't it matter? Please let Margaret or myself know of your experiences - if there is sufficient response, I will prepare an article for the next newsletter. Such information would be of benefit to us all.

The present newsletter is a little shorter than normal. It is difficult to motivate one's self over the holiday period and only a few articles were available. I am particularly interested in any information or observations on possible pollinators of dryandras - can I appeal for everyone to see what birds, insects or other animals visit your flowering dryandras and let me have some notes. Any information on success or failure with particular species, general observations on growth habits or cultivation in your area, reports on visits to gardens or to Western Australia, or any notes like those of Margarets in this newsletter on the ecological or conservation status of dryandras are all of interest. I will publish any articles I receive so please see what you can write during 1989.

I am grateful to Margaret for the cover illustration and for the leaf and capsule drawings for some of the new species she discusses in her articles. Margaret has now drawn leaves, seedlings and capsules for most species, some of the seedlings being grown by Hartley Tobin and others. We will be using these and other illustrations in a book on dryandras which we are now beginning. More about this next newsletter.

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## DRYANDRAS IN DANGER

Although most of our top soil in Western Australia is almost pure sand, areas of deep surface laterite gravel occur throughout the South West of the State where dryandras grow.

Much of the Darling Plateau is covered by a layer of brick-red rock, laterite, made up of spherical pebbles cemented in a buff colored matrix. It has a high iron and alumina content and is sometimes known as "ironstone" or "ironstone gravel" when it occurs as loose pebbles. Some of our dryandras' preferred habitat is in these gravel areas and many of the best remaining populations of dryandras are in reserves which have been set aside, not for the flora but to exploit the gravel for road making.

Quarrying the gravel has caused some of the dryandra species, those which shed their seeds annually from the capsules, to form thickets, pure stands, in these disturbed sites. When the gravel pits are abandoned and the vegetation re-grows many plants seem to thrive in the loosened gravel but the original balance of species would, no doubt be altered and possibly some lost in the process.

Gravel pits provide excellent picnic or overnight stops, incidentally, for travellers wishing to "botanize" among some of the best W.A. wildflowers while resting from a long drive. The gravel is used on the edges of bitumen roads as well as our "dirt" roads. The spherical nature of the pebbles makes pulling up on the side of the road take a little longer than expected especially when towing a caravan. On my first trip to W.A. in 1973 I discovered that it was always necessary to walk back quite a distance from where the car eventually stopped to where we'd spotted the wildflowers we wanted to look at! In wet weather it is not difficult to bog a vehicle in deep gravel. First travellers to W.A. take note! The use of gravel for roads is possibly causing the spread of some plants to other habitats. The single plants of both an un-named species (aff. *nobilis*) and another un-named one (aff. *armata*) which I noted growing on the edge of the Brand Highway north of Badgingarra might have originated from seed in gravel removed from their natural habitat. The former, in particular, seemed out of place, though growing and flowering well, in sand near a creek. Some species of dryandra only seemed to do well in their natural, lateritic soils, but others such as *D. nobilis*, *D. polycephala* and *D. drummondii* thrive in the Perth sand and flower prolifically. I have had no success, so far, with *D. preissii* and *D. bipinnatifida* - but I'm still trying!

A more serious threat to dryandras in the wild was brought to my attention when I returned to the site south of the Stirling Ranges where the new species of dryandra was discovered only last year. I'd been there a month before, but the flowers were not fully open. This time I found the plants in flower, but I received a terrible shock on seeing a wide expanse of the top of the low spongolite cliff had been scraped clear of soil and quarrying of blocks of stone has begun right up to where the dryandras are growing. A check at the Mining Department revealed that the mining lease includes most of the area, which is also in a recreation reserve. I am told that wildlife officers of the Albany Department of Conservation and Land Management (C.A.L.M.) have notified the lease holders of the existence of rare plants so we can only hope that they will not destroy them.

Spongolite (Pallinup siltstone) is largely made up of pieces of sponges which lived in the sea bed in ancient times. It is very soft and easily cut into building bricks. Quarrying of spongolite (at Twertup) was stopped when the Fitzgerald National Park was declared. It occurs throughout the park and at the site of the new dryandra where some out-lying plant species associated with it also occur - *Banksia laevigata*, for example. It seems we may be too late to save our dryandra unless the miners are sensitive to conservation of rare flora. We can only hope!

MARGARET PIERONI

See STOP PRESS page 8

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## CULTIVATION OF DRYANDRAS AT OCEAN GROVE, VICTORIA

Ocean Grove is a seaside town about 25 km. south east of Geelong. It has a fairly typical southern Victoria climate - cool, wet winters and dry summers. Days are frequently cloudy in summer and winter and we don't have consistent hot weather even over January and February, although occasional days reach the high thirties. The rainfall is moderate, around 625 mm a year. Wind is not a problem where I live (about two kilometres back from the beach) although salt winds do cause difficulty in some of the more exposed areas of the town. Contrary to most outsiders' expectations, the soil is not sandy but consists of shallow sandy-clay loam over a layer of buckshot gravel followed by yellow clay. The depth of this "soil" varies on my block from about 20 to 35 cms, making raised beds almost mandatory in lower lying areas. The block is one acre in extent and lies east-west. We deliberately sited the house facing north but as close as practical to the southern boundary, leaving more than half of the area in full sun. Most of my main garden beds thus face north and are in full sun although after eleven years, some beds are overgrown by tall shrubs and trees and constitute a "dry shade" situation.

I no longer have a bed set aside for Dryandras although there are six or more species growing in close proximity in some beds. A problem I've always had is growing plants too close together. My excuse is that they grow that way in nature anyway and besides, well drained garden space is usually at a premium so I should make the most of what I have. I have always believed that the main difficulty with growing banksias and dryandras here is the lack of light in the winter (too many cloudy days) and the relatively low average summer temperature. For example, I find it impossible to grow the northern sandplain banksias (*B. ashbyi*, *B. hookeriana*, *B. benthamiana* and *B. sceptrum*); similarly, I have never succeeded with *D. arborea* which grows in the hot inland near Coolgardie and Southern Cross, yet this species grows well at Wangaratta in north eastern Victoria. Consequently, the two criteria I always follow for growing dryandras are to choose the sunniest position I can find and where necessary, raise my beds to ensure adequate drainage. It goes without saying that one should read as much as possible about the plant and its requirements before finally selecting a garden position because some of the forest species such as *D. praemorsa*, *D. nobilis* and *D. hewardiana* can tolerate some shade and a couple of the hardier species such as *D. tenuifolia* are able to withstand somewhat wetter situations.

Before I talk about my successes and failures with dryandras, I should make some comments about soils and raised beds. In a previous newsletter, I discussed sandy versus clay soils for growing dryandras and indicated that most dryandras will grow well in heavy soils, providing they are well drained. Consequently, it is not necessary when making a raised bed to look for sandy soil. Two of my oldest and most successful beds were built up with the clay-soil mixture left behind as a 15 m mound when my house was being built. I simply dumped this on the ground to a depth of up to 40 cms and created my beds. Another bed was constructed from four truckloads of the excavation from a neighbours swimming pool. However, because clay soils can tend to cake and dry out on the surface during summer and become impervious to water, it is imperative to cover any clay-loam raised bed with a good depth of mulch. I have used scoria (crushed porous volcanic rock) successfully but any of the other standard mulches is satisfactory - a good depth is 7-15 cms. Try to avoid piling mulch around the trunks of plants as this can lead to fungal attack. Otherwise, even though mulch is not really necessary for the successful growing of dryandras (except in the raised bed situation discussed above), it does help retain moisture and minimise watering. In fact, watering is hardly necessary once dryandras are established. I have plants growing in very dry areas which have not been watered since their second summer and are now over ten years old. A deep watering once or twice a week is desirable when establishing small plants, however.

## SPECIES GROWN AND THEIR CULTIVATION REQUIREMENTS

Over the last 11 years, I have tried around 50 species of dryandra and have been reasonably successful with about 40. Some species have defied all my efforts to establish while a couple have tended to be unreliable and I have ceased growing them. Yet a few more are too large for my current garden or are so rare that seed has been difficult to obtain. Rather than consider them species by species, I will discuss them in groups:-

1. Reliable and relatively easy to grow.
2. Some problems in establishing but reasonably reliable once established.
3. Difficult to very difficult.

Group 1- Reliable and relatively easy to grow.

There are around 17 species in this category and many are commonly grown. I have had almost no problems with the following- *arctotidis*, *armata*, *ashbyi*, *conferta*, *cuneata*, *fraseri*, *hewardiana*, *nivea* (most forms), *praemorsa*, *pteridifolia* (the large, mounded form from the south coast), *sessilis* and *tenuifolia* (both prostrate and low, mounded forms). Both *D. calophylla* and *D. drummondii* are also very reliable although the latter suffers some leaf disfiguration and even leaf death due to fungal attack while interior parts of the *D. calophylla* clump die off as the plant grows older. Partial dying off of foliage is a problem with other dryandras such as *D. fraseri* and *D. nobilis* and in really bad cases it is probably best to replace the plant. One of the most successful of the smaller shrubs is the blue-green foliaged plant formerly sold as *D. arctotidis* but which is closest to the *D. nervosa* grown and illustrated in England around 1825. This is highly attractive, forms a compact mound about 0.5 by 0.7m and grows well in part shade as well as full sun. *Dryandra formosa* is very hardy once it finds a position it likes but I have lost plants unaccountably and I suspect they like some summer watering in dry positions. *D. obtusa* is also very good but is sometimes difficult at the seedling stage with yellowing and dying off. *D. serra* is another customer even in very dry shade but because the yellow flowers are small and insignificant, it is not particularly attractive as a garden plant. It is also quite spindly, mine being about three metres tall by 0.3m across.

Group 2- Some problems in establishing but reasonably hardy once established.

I have included some 18 species in this category but a number are there because my experience refers to only one or two plants; some may in fact fit into Group 1. Both *D. baxteri* and *D. carduaceae* give me problems at the seedling stage, generally due to soil fungus. Both are hardy and can withstand dryness when established; the bright yellow flowers of *D. carduaceae* and the fine, soft foliage of *D. baxteri* make them both desirable for any garden. Likewise, *D. proteoides* seedlings must have a very well drained potting mix but the plant is hardy in the garden and certainly grows better in heavy soils than in sand. *D. nobilis* seedlings are similarly sensitive to wet mixes and I have had difficulty in find a suitable garden position for it. A bed raised about 40cms near an old log proved successful and the plant is now six years old and flowers prolifically.

The following species are all growing well and have flowered. However, my observations refer to one or two plants only:

- D. carlinoides*- a delightful plant, flowers are excellent in posies and last several weeks in water.
- D. cirsioides*- several forms seem reliable. One was grown from cuttings, another is now heavily shaded but still grows well.
- D. erythrocephala*- my plant is now ten years old and was grown as a tub plant for three years. It flowered well for five or six years but is now heavily shaded and flowering is sparse.

*D. foliolata* and *D. foliosissima*- these are growing together and *D. foliolata* in particular is very sprawling. Neither has showy flowers but the foliage of both is interesting, *D. foliosissima* having probably the longest leaves in the genus. *D. kippistiana*- the delightful small flower-heads and fine foliage make this a desirable garden plant. It flowers in less than 18 months from seed.

*D. longifolia*- this is a very under-rated plant. I have two plants about 2.5m high which have striking, large yellow flower-heads in profusion along the stem in winter. The plants are bright green and are attractive even when not in flower.

*D. mucronulata*- this is closely similar to *D. baxteri* in foliage. It has massed small flower-heads and dense, long fine leaves which are good for floral arrangements.

*D. plumosa*- is noted for the hairyness of its flower-heads and foliage. I have grown it from cuttings and it seems hardy even in a very dry situation.

*D. pulchella*, *senecifolia*, *serratuloides* and *shuttleworthiana*- are all small shrubs. The first is quite rare and unfortunately mine died after five years when it became too shaded. The bright yellow flowers and blue-green foliage make it very attractive. *D. serratuloides* has been propagated from cuttings and grows well with some tendency for foliage to die back on the old wood. Neither of the other two has significant flower-heads but their foliage makes both worth growing.

*D. squarrosa*- strikes well from cuttings which is perhaps just as well because of its rarity in the wild. A prolific flowerer, older plants are sometimes disfigured by dead foliage and heavy "cobwebbing" of the leaves.

*D. stuposa*- is also relatively rare and is superficially similar to *D. nobilis* although the flower-heads are smaller and the plant is less robust. Seedlings require a well drained mix.

*D. subulata*- this is a must because of its unusual grass-like foliage and the clustering of the flower-heads around the base of the plant. My plant grows well sheltered among other dryandras.

### Group 3- Difficult to very difficult.

Problems with growing some of the plants discussed below appear to be universal. Others such as *D. quercifolia* and *D. polycephala* are successful under some conditions but not others.

*D. bipinnatifida* and *D. preissei*- are superficially similar and share the characteristic of being extremely slow growing in the garden. They survive in very dry conditions but five year plants show no signs of flowering.

*D. ferruginea*- one of the most difficult dryandras to keep alive as seedlings. It appears to be susceptible to fungal attack and seedlings need very well drained mixes. Some forms are also quite slow growing. Foliage dieback on old plants is also a problem.

*D. polycephala* and *D. quercifolia* are both magnificent flowering species and in my experience prefer sandy soils or very deep, well drained conditions. After many attempts, I have finally established a *polycephala* which is now four years old. *D. quercifolia* just survives for me but is nowhere near as healthy as plants at Cranbourne in deep sand which flower in less than two years.

*D. speciosa* is desirable because of the mousy-grey pendant flower-heads with their red or orange interiors. Unfortunately, the plant is often small and scruffy in cultivation and rarely looks vigorous.

*D. tridentata* and *D. vestita* are both small, slow growing plants in cultivation. The former is probably the most difficult of all dryandras to keep alive in the garden while *D. vestita* is extremely slow to flower and is never robust.

In addition to the above, I am growing several of the as yet undescribed species, including several forms of *D. nivea*, *D. armata* and *D. polycephala*. The very recently described *D. shanklandiorum* has been grown by several people including myself and is a very hardy plant with spectacular large flower-heads about 8-10 cms in diameter. It is sometimes referred to as the upright form of *D. pteridifolia* and originated from seed sold as "*D. preissei*".

I would be very pleased to receive reports of cultivation of dryandras from other areas of Australia.

TONY CAVANAGH

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#### DRYANDRAS AT MOUNT DESMOND

One day last October, a friend in the Wildflower Society called to deliver two dryandra specimens collected by Keith Bradby at Mount Desmond. I was very surprised to discover that one of them was a type I'd never seen before. The other was an un-named species for which we already had another location, Mount Short. It has affinities with *D. ferruginea* with similar flowers but with very narrow, short-lobed leaves. As I was leaving in two days time for a trip to collect a *Verticordia* to paint and to photograph the new *Dryandra* species south of the Stirling Ranges, and intended staying with mutual friends at Ongerup, I arranged to meet Keith at Mount Desmond to see his "new" species although it had finished flowering. I also wanted to photograph the *D. aff. ferruginea* which was in flower at the time.

Mount Desmond is near the southern end and Mount Short near the northern end of the Ravensthorpe Range, a string of low hills which runs to the north and south east of the town of Ravensthorpe. Quite apart from the dryandras, which as it turned out provided quite a few surprises, the slopes of Mount Desmond are a botanist's paradise. The area contains numerous species which also occur further to the south in the Fitzgerald National Park and some indigenous plants such as *Eucalyptus desmondensis* and *Grevillea fulgens*. The vegetation is difficult to walk through, consisting as it does of dense thickets of *Eucalyptus tetragona* and *E. preissiana* with *Banksia lemmaniana* and *Dryandra quercifolia* very common.

Keith showed me a plant of his "new" species. It is about a metre high with long, stiff dark green leaves. The spent flower-heads resemble those of *D. quercifolia* but are larger with very long bracts almost covering the flowers. It was among a thick growth of eucalypts and around about were many plants of the *D. aff. ferruginea*. Keith said they had found a few more of the "new" species but was unable to locate them again that day. A short distance away in what had been a small gravel pit, there were several very tall *D. foliosissima* plants and among them an equally tall dryandra which Keith claimed as another of his "new" species. It was not the same as the other one, however. The spent flower-heads looked more like typical *D. quercifolia* and the leaves, though the same size and approximate shape, had different shaped lobes. My impression was that it might be a hybrid - a cross between *D. quercifolia* and Keith's species.

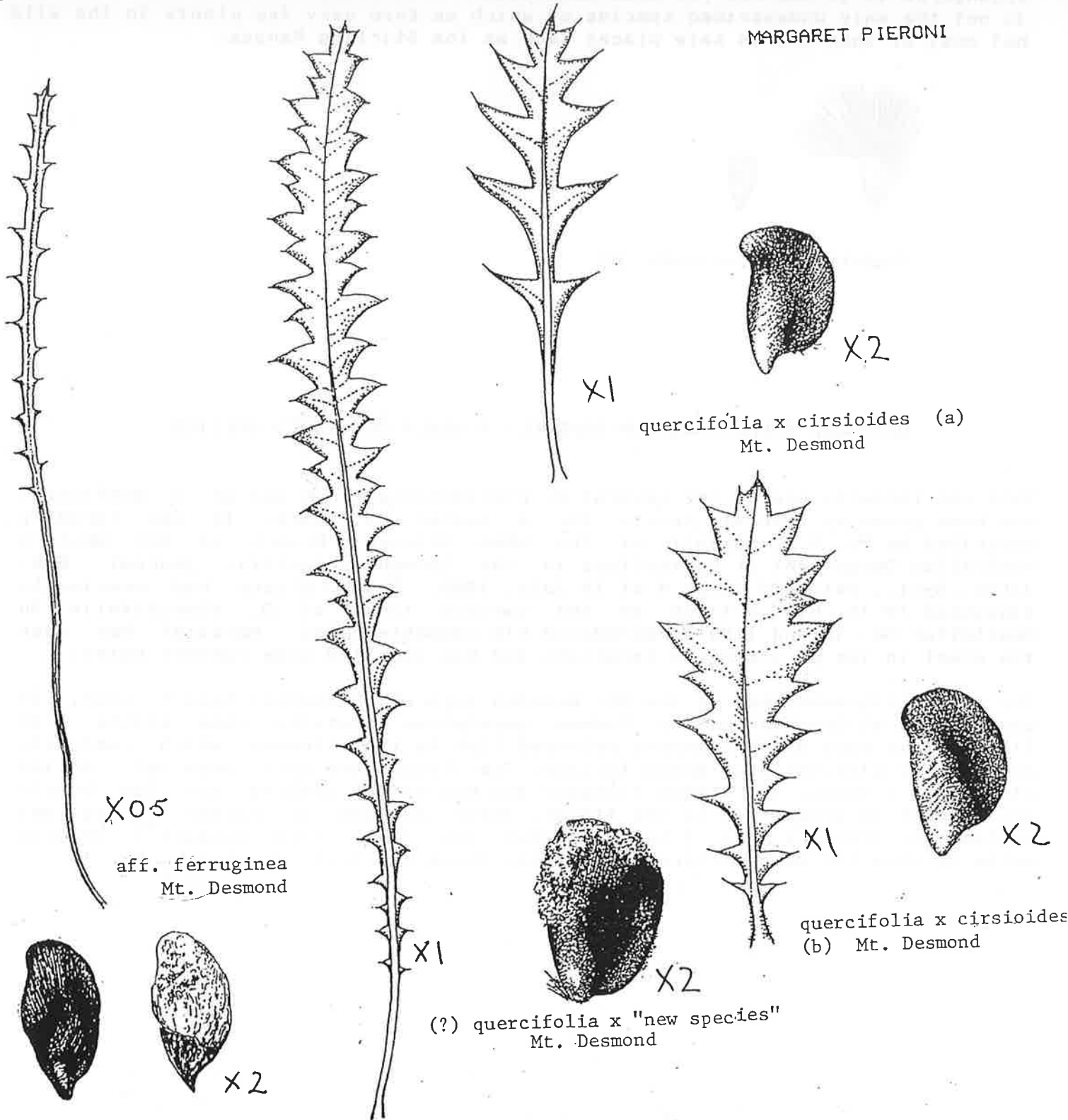
Keith had more surprises in store. A kilometre or so further on, he took me to see another plant he'd been unable to identify. It was huge, more than two metres high, branching low down and spreading to about four metres wide. The flower-heads once again looked like *D. quercifolia* but the leaves were like large *D. cirsioides* leaves. When we discovered plants of typical *D. cirsioides* growing almost along-side it, I became convinced it was yet another hybrid, and, indeed, further searching about revealed several other plants with leaves resembling one or other of the two species. Both *D. quercifolia* and *D. cirsioides* are very common in the area.

I have never, as far as I know, seen a hybrid dryandra so was astounded by the variety to be found in this location. Since my visit, I have begun to wonder whether Keith's "new" species might also be a hybrid- a cross between *D. quercifolia* and the aff. *ferruginea*. The mind boggles as they say!

An examination of the seed capsules seemed to lend weight to my theory in that they show characteristics intermediate between the species I have postulated as being the "parents", in the same way as do the leaves.

I'm looking forward to seeing these plants in flower some time next year. *D. quercifolia* and *D. cirsioides* usually flower in April and May. I'm told, although I've not seen them, that *D. quercifolia* flowers can be found at odd times during the year. I suppose that could explain its hybridization with a species, the *D. aff. ferruginea*, that doesn't flower until much later in the season.

MARGARET PIERONI





## STOP PRESS- THE KAMBALLUP DRYANDRA

(Editors note- This is the apparently new species discovered by Peter Luscombe and briefly described by Margaret in Newsletter No. 14. The following note is from a recent letter from Margaret and reports some very good news.)

One of the C.A.L.M. (Conservation and Land Management) officers rang me a few days ago to tell me that it will be declared "rare and endangered" and they will be continuing with their proposal to make the area a flora reserve. Greg Keighery told me they'd been considering it for a few years now because it has a variety of unusual species. With a new Dryandra species I suppose they will have a better case for creating a safe reserve. I was told by C.A.L.M. people that there were conflicting opinions as to whether a plant could be declared rare and endangered if it had not yet been described. Fortunately it can and will be. It is not the only undescribed species of which we know very few plants in the wild but most of them are in safe places such as the Stirling Ranges.



Kamballup species seeds. X|.

#### DRYANDRA SHANKLANDIORUM RANDALL- A NEWLY DESCRIBED SPECIES

This was formerly one of the several *D. pteridifolia* forms and as I mentioned, has been grown by several people for a number of years. It was formally described by Mr. R.P. Randall of the Weed Science Branch of the Western Australian Department of Agriculture in the German scientific journal *Bot. Jahrb. Syst.*, Vol. 109 issue 4 of 14 July, 1988. Keith Alcock had previously discussed it in his article on the various forms of *D. pteridifolia* in Newsletter No. 12 and I have reproduced his comments below. Margaret has seen the plant in two of its known locations and has supplied some further notes:

The form Keith describes is the Mt. Hampton form which Randall hadn't seen. It was planted at Cranbourne. The Cadoux population contains some plants with flowers that have a rich coppery coloured limb to the flowers which contrasts beautifully with the blue-green foliage. The flowers are very large and, unlike *pteridifolia* forms, the styles elongate and bow before opening and the bracts are smaller in proportion to the flower. Their perfume is rather strong and unpleasant. (Editors note- I have included the table from Randall's article below to show the main differences between these species).

Table 1.

| Character                    | <i>D. shanklandiorum</i>                              | <i>D. pteridifolia</i>  |
|------------------------------|---|---|
| Leaf lobes                   | glabrous  | tomentose underneath  |
| Involucral bract             |   |   |
| — shape                      | all lanceolate  | outer bracts ovate<br>inner bracts lanceolate                             |
| — length                     | 5—60 mm   | 19—25 mm  |
| Perianth and style           |   |   |
| — length                     | c. 55 mm  | 32 mm   |
| Perianth terminal tuft hairs | ferruginous   | white   |
| Follicle width               | 9—10 mm   | 19 mm   |
| Style exertion at anthesis   | well beyond perianth<br>which reflexes at<br>anthesis | not exceeding perianth<br>which remains more of<br>less erect at anthesis |

In the location where I've seen it, east of Cadoux, it occurs with a form of *D. conferta* and with *D. purdieana*. I haven't seen *D. horrida* in that vicinity and I wonder whether these two species have been confused. We have seeds of *D. shanklandiorum* from both the Mt. Hampton and Cadoux locations. In cultivation, it seems to be one of the hardiest dryandras and one I'd recommend for members to grow.

Could we have reports from anyone else who is growing this plant. Seed was sold for several years as "*D. preissei*" but of course the two are very different. The main characteristics which distinguish *D. shanklandiorum* are its upright habit to about 1.5 m. and the large flower heads around 8-10 cms. in diameter. I can echo Margaret's recommendation- it is one of the hardiest dryandras.

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#### 4. Upright Southern Cross - Hyden form

Location; Mount Hampton on the road between Moorine Rock and Hyden on a laterite rise.

Description; An upright plant with dense upright stems to 0.5-0.75m. Leaves less dense and shorter than the Stirling Range upright form. Flowers terminal on short branches below main axis. Both flowers and framework of plant more visible. Flowers creamy yellow but more obvious than other forms and consequently more showy.

Foliage; Approximately 25-35cm in length. Stems bare for first third of length then with leaflets generally angled forward to the leaf axis at 45°. Less tendency than other forms for lower leaflets to be small. Leaflets not at all revolute, generally feel flatter and thinner than other forms. As with form No 2 above, miniature leaves are produced at the base of new growth. Characteristically with the leaves of this form, once the fuzz of purple red hairs of the new growth are shed the leaves are glabrous on both upper and lower surfaces. The undersides have a sculptured pitted surface.

Flowers; Very showy large flower heads are produced. Outer bracts are generally longer and thinner than other forms - to 2.5cm long by only 0.5cm, lengthening to 4cm with the narrower inner bracts. The outer surface of both inner and outer bracts is densely covered with long red-brown hairs and the inner surfaces are glabrous and light golden brown, darkening by the time seed has set to dark red-brown. Seed, as with other forms, embedded in dense red-brown felt. Flower buds up to 3-4cm wide by 5-6cm long and fully open flowers 8-10cm across.

Keith Alcock.