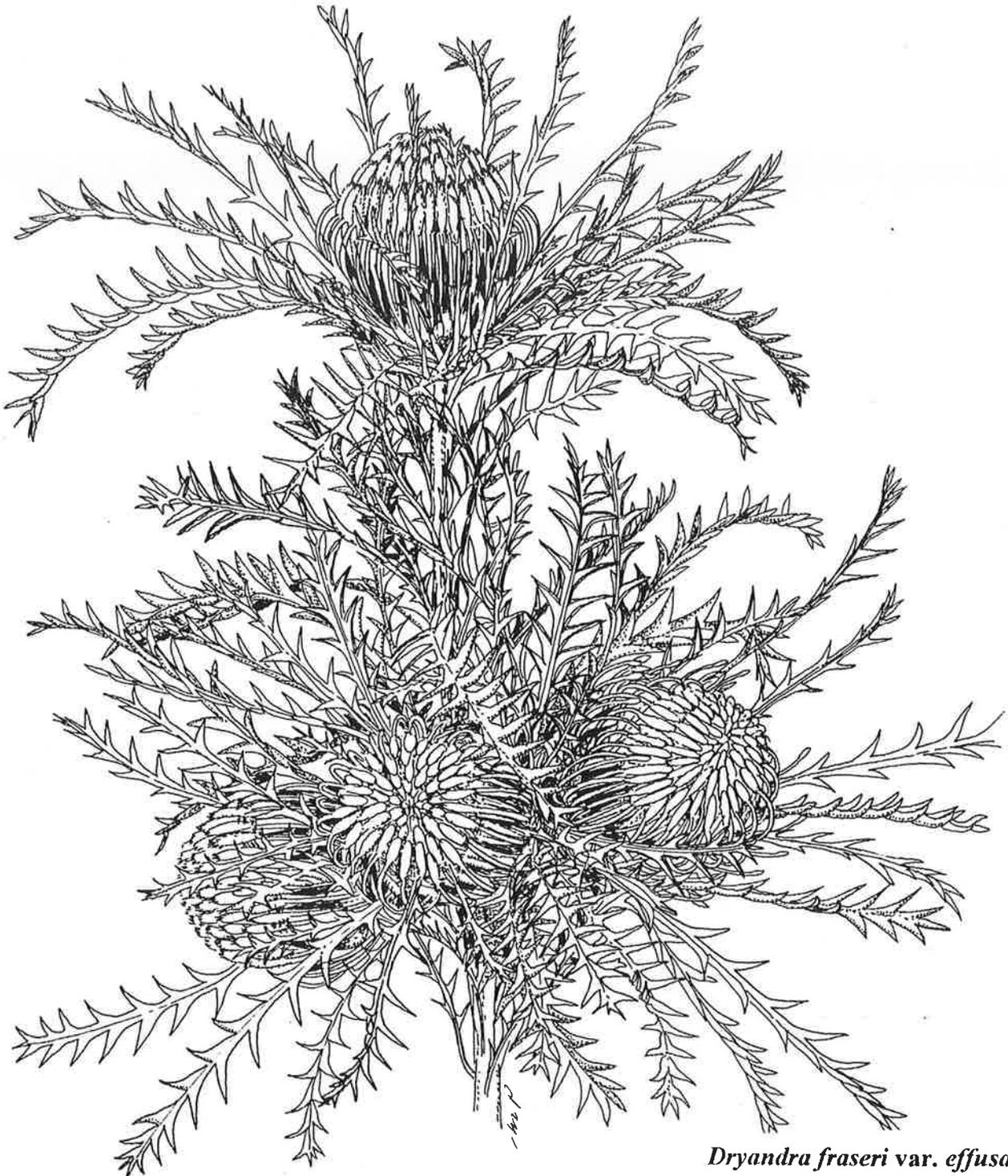


DRYANDRA STUDY GROUP  
NEWSLETTER NO. 48



*Dryandra fraseri* var. *effusa* ms

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ASSOCIATION OF SOCIETIES FOR GROWING  
AUSTRALIAN PLANTS

*Dryandra fraseri* var. *effusa* ms is the form from near Mt. Lesueur, pictured in colour in Newsletter no. 38. It is a small, sprawling shrub, flowering in July.

## DRYANDRA STUDY GROUP

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Welcome to the first Newsletter of 2005.

Well, the good news is that funding has finally been secured for *The Dryandra Book*. As I indicated in previous newsletters, the publisher who is interested had indicated that as the book would not be a commercial proposition because of its highly specialized nature and limited print run, he would require a subsidy to undertake its publishing. Funding as either a grant or a loan has been offered by APS Victoria, APS Geelong and the Western Australian Wildflower Society sufficient to cover the publisher's subsidy. Further negotiation on terms and conditions is still required but we are aiming to have the book ready for launching at the ASGAP Perth Conference which begins on October 1. It's been a long road but we hope that things will run smoothly from here on.

The Fed Rogers' Seminar on Banksias and Dryandras held in Colac in September was an outstanding success. I have written a brief report for this newsletter but I am sure that the large group of attendees thoroughly enjoyed the weekend. Many thanks to Brendon Stahl and the Colac-Otway Group of APS who did a superb job of organizing and to APS Geelong who provided a large stock of Banksias and uncommon Dryandras for sale. In southern Victoria, we have had a good, moderately wet spring and a relatively sunny summer. It has done funny things to *Dryandra* flowering, one of my *D. formosa* still has the odd bud and flowered quite happily through to December. *D. porrecta* flowered for the first time in September/October and I can see why this is one of Margaret's favourites. The flower heads were like a larger version of *D. calophylla* but an attractive pink and yellow and in my case were above ground. I was less successful with my cutting-grown *D. anatona*. While this is relatively easy to strike from cuttings, it appears to be quite sensitive to drying out and one hot day without sufficient water caused the leaves on my second plant to go brown and that was it. Has anyone else had experience with *D. anatona*?

In this issue, I have reproduced Margaret and my papers from the Fred Rogers' Seminar and Margaret's account of her locating the possible new species now simply known as *D. sp.* Boyup Brook. The pictures in the colour page are probably the first ever taken of this taxon; the other, *D. fasciculata*, is another species that has not previously been illustrated in colour. I would like to thank Margaret for the photographs and David Lightfoot for again producing the colour page. For the Seminar I produced a sheet which listed Dryandras for specific situations, problem species (ie unreliable or hard to keep alive in the ground) and a "top ten" small Dryandras. This follows my report on the Seminar but we would welcome your feedback and comments. Thanks to much good detective work by our new member Liesbeth Uijtewaal, we have found that in common with other European countries, quite a number of of Dryandras were grown in the Netherlands in the nineteenth century. We have written a short article on these findings but there is still much to be learned. It is good to be able to report member's experiences in the Notes from Members – please keep up the good work. Lastly, I have included rather belatedly a healthy Financial Statement for the group for 2003-2004 and a list of members for 2004.

Just a final point. Most of you know that Margaret has now shifted to Denmark. The new house is progressing well and she hopes to be in by March. I have included her new address and both our email addresses. Note that mine is different to the Hotmail address I have used in the past. I am having web page errors with Hotmail and have switched but messages still seem to get through on Hotmail. Its just that sometimes I have problems opening them.

Happy *Dryandra* growing

Tony

## The genus *Dryandra* – an Overview

### Introduction

After *Grevillea* and *Hakea*, *Dryandra* is the third largest genus in the family **Proteaceae**. With great diversity of foliage, striking flower heads in many species and a number of unique and unusual habits, dryandras offer much horticultural interest. The genus is most closely related to *Banksia* so it is fitting that the two groups should be considered together in this Fred Rogers' Seminar. Indeed, some botanists believe that *Banksia* and *Dryandra* had a common ancestor and that *Dryandra* should be incorporated into *Banksia*. The resultant "super" genus with around 173 species would be the seventh largest genus of woody plants in Australia! From a grower's and gardener's point of view, there are still a number of significant differences between the two groups and today I want to outline some of the features and characteristics of dryandras which make them an outstanding group if you are looking for something a little different in the garden. I will briefly talk about the history of their discovery and their cultivation in Europe in the 19<sup>th</sup> century when over 30 species were grown, discuss their habitat and ecology, look at their horticultural features and briefly consider their propagation. A list of recommended species is included.

### History of discovery and cultivation

*Dryandra* today are confined to the south-west of Western Australia, mainly within the South-West Botanical Province, and west of a line joining Israelite Bay (east of Esperance) and Shark Bay. There is fossil evidence that these species are the remnants of a much larger genus which once spread over Europe and the northern hemisphere millions of years ago. A new genus *Dryandra* was created by the Scottish botanist Robert Brown in 1810 and was based on 13 species collected from King George Sound and around Esperance. The type specimen was *Dryandra formosa*. The name honours the Swedish botanist Jonas Dryander who was later to become librarian and herbarium curator to Sir Joseph Banks. Two other names who were responsible for adding many new species during the 19<sup>th</sup> century were the seed and plant collectors William Baxter and James Drummond who between them discovered over 30 new dryandras, more than 60% of the 47 dryandras recognised by George Bentham when he reviewed the genus in 1870. New species were described in the 20<sup>th</sup> century but it was known from the 1960s that there were "more than 20" unnamed species. W.A. Herbarium botanist Alex George began a revision in the 1970s culminating in the publication in 1999 of the account in the *Flora of Australia* in which 93 species and 34 "infrageneric" (varieties and subspecies) taxa were recognised. A recent paper adds a new species and five other taxa, bringing the total number of *Dryandra* to 135 taxa.

All the exploration expeditions to Australia in the 18<sup>th</sup> and 19<sup>th</sup> centuries carried gardeners and seed and plants were extensively collected for growing in the King's garden at Kew and in the hot houses and conservatories of the rich and famous in both England and Europe. Exotic plants from South Africa, New Holland and other countries were eagerly sought after and many large nurseries were established to supply the plants. Individual seed and plant collectors were sent to foreign countries by the nurseries so it is no surprise that both dryandras and banksias were soon in cultivation in England and continental Europe. We know that around 25 dryandras were grown in England and a smaller number in Europe, about 30 species in all, more than most enthusiastic Australian growers would have tried. Grown in pots in glasshouses, some lived for more than 50 years and were found in such unlikely places as Vienna, Florence, Belgium and in many botanic gardens and private collections in Great Britain. They flowered and set seed and European gardeners became proficient at growing them from seed and cuttings. A change in plant preference to ferns, orchids and plants needing a moist environment and the use of moist, steam-heated glasshouses led to their disappearance in Europe but we can still learn much from the horticultural practice and observations of these early gardeners in growing them in Australia today.

## Characteristics of dryandras

Their nearest relatives are the banksias. Both genera have flower heads or inflorescences made up of hundreds or even thousands of individual flowers. Whereas the flowers in *Banksia* are usually arranged in an elongated spike, those in *Dryandra* are found in squat heads rather like those of a waratah, with the individual flowers growing vertically from a flat or convex base known as a receptacle. In general, the flower heads in *Dryandra* are smaller than those in *Banksia* but in some species they are very profuse, seemingly growing out of every leaf axil. Other major differences are the ring of bracts which surround the flower heads in *Dryandra* (the involucral bracts) and the thinner, less woody seed follicles or capsules which are often easily detached; in *Banksia*, they are firmly attached to a woody cone. More so than in *Banksia*, follicles of up to 20 species open on the bush when the seed is mature. The involucral bracts may be quite inconspicuous once the flowers have opened or in about 12 species, of which *D. proteoides*, *D. ferruginea*, *D. tenuifolia* and *D. quercifolia* are the best known, they are large, smooth and shiny and golden brown, bronze or black in colour, framing the flower heads to perfection. A few like *D. shuttleworthiana*, *D. plumosa* and the pendant *D. speciosa* have long, furry or wispy bracts in grey-browns

The striking terminal flower heads of some species are a major attraction of dryandras. Flowering mainly in winter and early spring, their peak month is August when up to 80 taxa may be seen in bloom. *Dryandra falcata*, *D. nobilis*, *D. formosa*, *D. quercifolia*, *D. anatona* and *D. quercifolia* all have large, showy heads in yellow or orange. While yellow is the predominant colour, nearly every shade is represented, from greenish and lemon-yellow through to rich egg-yolk yellow and golden yellow. In some, the yellow is suffused with a watermelon-pink while up to six have red or wine-coloured flowers. Some flowers are two-toned, *D. idiogenes* being cream and red, *D. erythrocephala* being chocolate and cream. The remainder are varying shades of brown, from dark chocolate brown to light tan and buff. In many of the small bushy or clumping species, the flower heads can be hidden inside the foliage while in some like *D. calophylla* and *D. porrecta*, they can appear on underground stems some distance from the foliage or even open underground. Another group including *D. kippistiana*, *D. carlinoides* and *D. subpinnatifida* have numerous small heads terminating short, lateral branches. They are very attractive for small floral arrangements.

Dryandras are usually small to large shrubs with only about four reaching tree proportions above four metres. They exhibit a tremendous variation in both form and foliage – indeed, their unusual foliage and its diversity are one of their strongest features as garden plants. There are about 25 prostrate or dwarf species, and around 20 tall shrubs that usually exceed 2.5 metres. The rest range from 0.5 to 2 metres tall and may be upright or spreading in habit. Two growth forms found in *Dryandra* do not occur in *Banksia*. These are the dense, columnar habit with numerous leaves and short branchlets crowded along the stem, found in some forms of *D. cirsioides* and members of the *D. conferta* group, and low, rounded shrubs such as *D. kippistiana*, *D. subpinnatifida* and *D. carlinoides* with many multi-branched stems hidden inside dense foliage. A couple, like *D. nervosa* and *D. drummondii* grow as large balls to 1.5 metres in diameter with their flower heads hidden inside. Leaf form is a particularly attractive feature. They are rarely entire, usually being prickly toothed with serrations cutting to or close to the midrib or with coarse lobes and wide sinuses or prickly and shaped like oak leaves. Some like *D. lindleyana*, *D. blechnifolia* and *D. nervosa* are fern-like, others like *D. baxteri* are fine and soft while most are linear and very long and narrow. Leaves are usually light to dark green but can also be blue-grey to deep blue-green and these latter provide an interesting garden contrast. One form of *D. drummondii* has blue-green leaves to 60-70 cm long which are much sought after in Japan for floral decorations. In some species like *D. nervosa*, new growth in spring is felted and a soft pink-brown, a nice contrast to the dark green leaves.

## Habitat

Some dryandras are limited in occurrence or are rare and endangered while others have a more widespread though often discontinuous distribution. They commonly occur in shallow, poor and clayey soils, most notably in laterite gravelly situations. Where they occur in sandplain country, they are usually indicators of

plains. While soils are shallow and poor, they are invariably well drained. A few species grow in winter-wet situations and others can be found in rocky soils derived from granite or quartzite. Forms of *D. sessilis* and *D. lindleyana* can be found flourishing on coastal limestones. Another characteristic is that dryandras often occur in communities with more than one species present and are the dominant plants in such spots. Only a few, including *D. formosa*, *D. praemorsa*, *D. nobilis*, *D. squarrosa* and sometimes *D. polycephala* and *D. hewardiana* occur in shade in forested situations. The remainder grow mainly in full sun, among other shrubs or in communities rather than exposed positions.

### **Cultivation, propagation and uses of *Dryandra***

Observations from their natural habitats and experience indicate that the prime requirement for dryandras to grow well in cultivation is a freely draining topsoil. While they come from shallow soils in the west and are more adaptable than banksias to shallow clay soils, they thrive on deep sandy soils and deep loams as well as shallow rocky soils, providing all are well drained. In a garden situation, raising beds 20 to 30 cm can improve drainage sufficiently to increase the range of species that are successful. Many of the smaller species are suitable for rockeries and are adaptable to pot cultivation, which also allows plants to be shifted around to take advantage of the sun. A sunny situation is required for many species, especially those from the northern sandplains; in shade, flowering and growth can be reduced. Most can tolerate dryness once established and up to 20 have proven frost hardiness down to around  $-5^{\circ}\text{C}$ . In the west, many receive a predominantly winter rainfall and a dry and hot summer. They do not tolerate high humidity so are not successful in tropical and northern coastal areas. The horticultural features of all *Dryandra* species and a list of recommended species are given in the appendix.

Dryandras are mainly grown from seed although some success has been had with young, medium wood cuttings taken in autumn and late winter. Species with relatively thin and near hairless stems such as *D. tenuifolia*, *D. polycephala*, *D. hewardiana* and the commercially-important *D. quercifolia* have been successfully grown from cuttings although roots can be slow to form (several months) and may be weak and brittle. Surprisingly, the rare *D. anatona* from the Stirling Range is one of the easiest to root even though it has somewhat thick stems; experimentation may reveal similar species. Growing from seed is more reliable and with quality seed, better than 50% germination is achievable. Most take from four to eight weeks to germinate and the best time to sow seed is August-September in southern Victoria; late March to May is better in warmer areas. It is preferable to do all growing in the open with good air circulation as seedlings can be susceptible to damping-off. For this reason, it is essential that seedling mixes and potting soils be very open and well drained. Seedlings should be pricked out about four to six weeks after emergence and can be ready for planting out in about six months.

Apart from being ornamental garden plants, some species have become well known as cut flowers. These include *D. quercifolia*, *D. formosa*, *D. stiposa*, *D. polycephala* and the large-flowered *D. praemorsa* var. *splendens* (especially the pink-flowered form). They have excellent keeping qualities for several weeks in a vase and even when dried, *D. polycephala* retains its bright yellow colour. The small heads of this species and others like *D. kippistiana* and *D. carlinoides* can be individually wired for floral arrangements while those with larger heads have been used in funeral wreaths. Fresh and dried leaves of *D. drummondii* and *D. mucronulata* are in demand for floral work as are dried heads of species with prominent bracts such as *D. proteoides* and *D. tenuifolia*.

The successful cultivation of many species of both *Banksia* and *Dryandra* still poses problems and while most are satisfactory garden plants, others refuse to be tamed. I hope that you all gain from this Fred Rogers' seminar and go out and try more of these wonderful groups of Australian plants.

Tony Cavanagh  
Ocean Grove.

Horticultural features of *Dryandra*

Species	Attractive Foliage	Showy Flowers	Cut flowers	Rockery	Ground Cover	Shrub <1.5 m	Large Shrub > 2 m	Container Plant	Tolerates Dryness	Tolerates Frost	Tolerates Part Shade	Prefers Full Sun
<i>acanthopoda</i>		✓	✓				✓				✓	
<i>anatona</i>		✓					✓				✓	
<i>arborea</i>		✓					✓				✓	
<i>arctotidis</i>	✓			✓	✓			✓		✓	✓	
<i>armata v. armata</i>		✓	✓			✓		✓			✓	
<i>armata v. ignicida</i>		✓	✓			✓					✓	
<i>aurantia</i>	✓	✓		✓	✓			✓			✓	
<i>baxteri</i>	✓					✓					✓	
<i>bipinnatifida s. bipinnatifida</i>	✓	✓		✓	✓			✓	✓		✓	
<i>bipinnatifida s. multifida</i>	✓	✓		✓	✓						✓	
<i>blechnifolia</i>	✓			✓	✓			✓			✓	
<i>borealis s. borealis</i>		✓				✓		✓			✓	
<i>borealis s. elatior</i>		✓				✓		✓			✓	
<i>brownii</i>	✓			✓	✓	✓		✓	✓	✓	✓	
<i>calophylla</i>	✓			✓	✓			✓	✓	✓	✓	
<i>carlinoides</i>		✓	✓			✓		✓	✓		✓	
<i>catoglypta</i>	✓	✓		✓		✓		✓			✓	
<i>cirsioides</i>	✓	✓				✓		✓			✓	
<i>columnaris</i>	✓					✓		✓			✓	
<i>comosa</i>	✓	✓				✓		✓			✓	
<i>concinna</i>	✓					✓		✓			✓	
<i>conferta v. conferta</i>	✓					✓		✓			✓	
<i>conferta v. parva</i>	✓					✓		✓			✓	
<i>corvijuga</i>	✓	✓				✓		✓			✓	
<i>cuneata</i>		✓	✓			✓	✓	✓			✓	
<i>cynaroides</i>						✓		✓			✓	
<i>cypholoba</i>	✓	✓		✓	✓			✓	✓		✓	
<i>drummondii s. drummondii</i>	✓			✓	✓			✓			✓	
<i>drummondii s. hiemalis</i>	✓			✓	✓			✓			✓	
<i>drummondii s. macrorufa</i>	✓					✓		✓			✓	
<i>echinata</i>		✓	✓			✓		✓			✓	
<i>epimicta</i>	✓			✓	✓			✓	✓	✓	✓	
<i>erythrocephala v. erythrocephala</i>	✓					✓		✓			✓	
<i>erythrocephala v. inopinata</i>	✓					✓		✓			✓	
<i>falcata</i>		✓	✓			✓		✓			✓	
<i>fasciculata</i>	✓					✓		✓			✓	
<i>ferruginea s. ferruginea</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. tutanningensis</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. pumila</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. obliquiloba</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. chelomacarpa</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. flavescens</i>	✓	✓		✓	✓			✓			✓	
<i>ferruginea s. magna ms.</i>	✓	✓				✓		✓			✓	
<i>fililoba</i>	✓					✓		✓			✓	
<i>foliolata</i>	✓					✓		✓			✓	
<i>foliosissima</i>	✓					✓		✓			✓	
<i>formosa</i>	✓	✓	✓			✓		✓			✓	

Species	Attractive Foliage	Showy Flowers	Cut flowers	Rockery	Ground Cover	Shrub <1.5 m	Large Shrub > 2 m	Container Plant	Tolerates Dryness	Tolerates Frost	Tolerates Part Shade	Prefers Full Sun
<i>fraseri v. fraseri</i>		✓		✓		✓		✓			✓	✓
<i>fraseri v. ashbyi</i>	✓	✓		✓		✓	✓	✓		✓	✓	✓
<i>fraseri v. oxycedra</i>	✓	✓	✓				✓	✓			✓	
<i>fraseri v. crebra ms.</i>	✓	✓	✓	✓	✓	✓		✓			✓	✓
<i>fraseri v. effusa ms.</i>	✓	✓		✓		✓		✓			✓	✓
<i>fuscobractea</i>		✓		✓		✓		✓			✓	✓
<i>glauca</i>		✓				✓		✓			✓	✓
<i>hewardiana</i>		✓	✓				✓	✓			✓	✓
<i>hirsuta</i>		✓	✓				✓	✓			✓	✓
<i>homida</i>	✓	✓	✓				✓	✓			✓	✓
<i>idigenes</i>	✓	✓		✓		✓		✓			✓	✓
<i>insulanemorecincta</i>	✓			✓		✓		✓			✓	✓
<i>ionthocarpa s. ionthocarpa</i>	✓	✓		✓		✓		✓		✓	✓	✓
<i>ionthocarpa s. chrysophoenix</i>	✓	✓		✓	✓	✓		✓			✓	✓
<i>kippistiana v. kippistiana</i>	✓	✓	✓	✓		✓		✓			✓	✓
<i>kippistiana v. paenepeccata</i>		✓	✓	✓		✓		✓			✓	✓
<i>lepidorhiza</i>	✓			✓	✓	✓		✓			✓	✓
<i>lindleyana s. lind. v. lindleyana</i>	✓			✓	✓			✓		✓	✓	✓
<i>lindleyana s. lind. v. mellicula</i>	✓			✓	✓	✓		✓			✓	✓
<i>lindleyana s. pollostata</i>	✓			✓	✓	✓		✓			✓	✓
<i>lindleyana s. media</i>	✓			✓	✓	✓		✓			✓	✓
<i>lindleyana s. agricola</i>	✓			✓	✓	✓		✓			✓	✓
<i>lindleyana s. sylvestris</i>	✓			✓	✓	✓		✓			✓	✓
<i>longifolia s. longifolia</i>	✓	✓	✓				✓	✓			✓	✓
<i>longifolia s. calcicola</i>	✓	✓	✓			✓		✓			✓	✓
<i>longifolia s. archeos</i>	✓	✓	✓			✓		✓			✓	✓
<i>meganotia</i>	✓	✓		✓		✓		✓			✓	✓
<i>mimica</i>	✓			✓	✓			✓			✓	✓
<i>montana</i>	✓						✓	✓		✓	✓	✓
<i>mucronulata s. mucronulata</i>	✓						✓	✓			✓	✓
<i>mucronulata s. retrorsa</i>	✓	✓	✓			✓		✓			✓	✓
<i>nana</i>	✓	✓		✓	✓	✓		✓			✓	✓
<i>nervosa</i>	✓					✓		✓		✓	✓	✓
<i>nivea s. nivea</i>	✓			✓		✓		✓			✓	✓
<i>nivea s. uliginosa</i>	✓			✓		✓		✓			✓	✓
<i>nobilis s. nobilis</i>		✓				✓		✓		✓	✓	✓
<i>nobilis s. fragrans</i>	✓	✓	✓			✓		✓			✓	✓
<i>obtusata</i>	✓	✓		✓	✓			✓		✓	✓	✓
<i>octotriginta</i>	✓	✓		✓		✓		✓			✓	✓
<i>pallida</i>	✓						✓	✓			✓	✓
<i>platycarpa</i>				✓		✓		✓			✓	✓
<i>plumosa s. plumosa</i>	✓					✓		✓			✓	✓
<i>plumosa s. denticulata</i>	✓					✓		✓			✓	✓
<i>polycephala</i>		✓	✓			✓		✓		✓	✓	✓
<i>porrecta</i>	✓			✓	✓			✓			✓	✓
<i>praemorsa v. praemorsa</i>		✓	✓			✓		✓		✓	✓	✓
<i>praemorsa v. splendens</i>		✓	✓			✓		✓		✓	✓	✓
<i>preissii</i>	✓	✓		✓	✓			✓			✓	✓
<i>prionotes ms.</i>	✓			✓	✓	✓		✓			✓	✓

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Species	Attractive Foliage	Showy Flowers	Cut flowers	Rockery	Ground Cover	Shrub <1.5 m	Large Shrub > 2 m	Container Plant	Tolerates Dryness	Tolerates Frost	Tolerates Part Shade	Prefers Full Sun
<i>proteoides</i>	✓	✓							✓	✓		
<i>pseudoplumosa</i>	✓	✓					✓				✓	
<i>pteridifolia</i> s. <i>pteridifolia</i>	✓	✓		✓	✓			✓	✓			✓
<i>pteridifolia</i> s. <i>vernalis</i>	✓			✓	✓			✓	✓			✓
<i>pteridifolia</i> s. <i>inretita</i> ms.	✓			✓	✓			✓				✓
<i>pulchella</i>	✓	✓										✓
<i>purdieana</i>		✓					✓		✓	✓		
<i>quercifolia</i>		✓	✓				✓		✓	✓		
<i>rufistylis</i>	✓						✓		✓		✓	
<i>sclerophylla</i>	✓			✓				✓	✓		✓	
<i>seneciifolia</i>	✓			✓		✓		✓				✓
<i>serra</i>	✓						✓				✓	
<i>serratuloides</i> s. <i>serratuloides</i>	✓	✓		✓		✓		✓			✓	
<i>serratuloides</i> s. <i>perissa</i>	✓	✓		✓		✓		✓			✓	
<i>sessilis</i> v. <i>sessilis</i>		✓					✓		✓		✓	
<i>sessilis</i> v. <i>flabellifolia</i>		✓					✓		✓		✓	
<i>sessilis</i> v. <i>cordata</i>		✓					✓		✓		✓	
<i>sessilis</i> v. <i>cygnorum</i>		✓					✓		✓		✓	
<i>shanklandiorum</i>	✓	✓		✓		✓		✓	✓	✓		
<i>shuttleworthiana</i>	✓	✓		✓		✓		✓	✓	✓		
<i>speciosa</i> s. <i>speciosa</i>		✓		✓		✓		✓	✓	✓		✓
<i>speciosa</i> s. <i>macrocarpa</i>		✓		✓		✓		✓	✓	✓		✓
<i>squarrosa</i> s. <i>squarrosa</i>		✓	✓				✓		✓			✓
<i>squarrosa</i> s. <i>argillaceae</i>		✓					✓		✓		✓	
<i>stenoprion</i>	✓			✓	✓			✓				✓
<i>stricta</i>	✓	✓	✓				✓		✓			✓
<i>stuposa</i>	✓	✓	✓				✓		✓			✓
<i>subpinnatifida</i> v. <i>subpinnatifida</i>	✓	✓		✓		✓		✓	✓	✓		✓
<i>subpinnatifida</i> v. <i>imberbis</i>	✓			✓		✓		✓	✓		✓	
<i>subulata</i>	✓			✓	✓			✓	✓	✓		
<i>tenuifolia</i> v. <i>tenuifolia</i>	✓	✓		✓	✓		✓		✓		✓	
<i>tenuifolia</i> v. <i>reptans</i>		✓		✓	✓		✓		✓		✓	
<i>tortifolia</i>	✓			✓	✓		✓		✓			✓
<i>tridentata</i>	✓	✓		✓	✓		✓		✓			✓
<i>trifontinalis</i>	✓	✓					✓		✓			✓
<i>vestita</i>	✓			✓	✓		✓		✓			✓
<i>viscida</i>	✓	✓		✓	✓		✓		✓			✓
<i>wonganensis</i>	✓	✓				✓		✓	✓		✓	
<i>xylothemelia</i>		✓		✓		✓		✓	✓		✓	

✓1 indicates that the plant has both small and large forms

### Recommended *Dryandra* for the garden

Prostrate & dwarf shrubs	Shrubs below 2 m	Tall shrubs above 2 m
<i>arctotidis</i>	<i>armata</i> var. <i>armata</i>	<i>anatona</i> ***
<i>bipinnatifida</i> subsp. <i>multifida</i>	<i>carlinoides</i> *	<i>baxteri</i>
<i>brownii</i>	<i>cirsioides</i>	<i>borealis</i> subsp. <i>elatior</i>
<i>calophylla</i>	<i>conferta</i> (rare blue leaf form)	<i>conferta</i> var. <i>conferta</i>
<i>ferruginea</i> sub. <i>chelomacarpa</i>	<i>drummondii</i> (all taxa)	<i>cuneata</i>
<i>ferruginea</i> sub. <i>flavescens</i>	<i>ferruginea</i> forms*	<i>falcata</i>
<i>fraseri</i> var. <i>effusa</i>	<i>fraseri</i> (various taxa)	<i>formosa</i>
<i>lepidorrhiza</i>	<i>kippistiana</i> **	<i>hewardiana</i>
<i>lindleyana</i> (various taxa)	<i>meganotia</i>	<i>longifolia</i> subsp. <i>longifolia</i>
<i>obtusata</i>	<i>nervosa</i>	<i>mucronulata</i> (both)
<i>porrecta</i>	<i>nivea</i> subsp. <i>nivea</i>	<i>nobilis</i> (both)
<i>subulata</i>	<i>serratuloides</i> s. <i>serratuloides</i> **	<i>plumosa</i> subsp. <i>plumosa</i>
<i>stenoprion</i> *	<i>shanklandiorum</i>	<i>polycephala</i>
<i>tenuifolia</i> var. <i>reptans</i>	<i>speciosa</i> (both)*	<i>praemorsa</i> (both)
	<i>subpinnatifida</i> (both)	<i>proteoides</i> ****
	<i>tenuifolia</i> var. <i>tenuifolia</i>	<i>pseudoplumosa</i>
	<i>tridentata</i>	<i>quercifolia</i>
	<i>viscida</i> *	<i>sessilis</i> (various taxa)
		<i>squarrosa</i> subsp. <i>squarrosa</i>

\* = requires sun and excellent drainage

\*\* = sometimes short-lived

\*\*\* = grows from cuttings, vigorous but may be short lived

\*\*\*\* = requires excellent drainage

### Additional reading on *Dryandras*

W.R. Elliot and D.L. Jones (1984). *Dryandra*. In *Encyclopaedia of Australian plants*, Vol. 3, pp. 349-368. Melbourne, Lothian. (Updated in Supplement).

A.S. George (1984). *Dryandra*. In *An introduction to the Proteaceae of Western Australia*, pp. 30-45. Kenthurst, Kangaroo Press.

A.S. George (1996). "New taxa and a new infrageneric classification in *Dryandra* R. Br. (Proteaceae: Grevilleoideae). *Nuytsia*, 10(3): 313-408.

A.S. George (1999). *Dryandra*. In *Flora of Australia*, 17B: 251-363.

A.S. George (2004). "Further new taxa in *Dryandra* (Proteaceae: Grevilleoideae)". *Nuytsia*, in press.

M. Pieroni and T. Cavanagh (1999). "The 'honeypot dryandras, the series *Niveae* of the genus *Dryandra*". *Australian Plants*, 20(160): 139-143, 167-174.

R. Sainsbury (1984). *Field guide to Dryandra*. Nedlands, University of Western Australia Press.

J.W. Wrigley and M. Fagg (1989). *Dryandra*. In *Banksias, Waratahs, and Grevilleas*, pp. 151-185. Melbourne, Collins.

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## New Discoveries and Conservation Issues in *Dryandra*

Some of the 'hot spots' for dryandras are in the Stirling Range, (about 26 taxa) and the Eneabba sandplain and the Lesueur area. 'Hi-Vallee' farm, north-east of Badgingarra has 19 or 20. I don't want to dwell too much on growing conditions in the wild, except to say that many dryandras prefer lateritic gravelly areas and old gravel pits are good places to find them. Others grow in sand or sand and gravel and a few in coastal limestone or around granite outcrops. The only *Dryandra* that could be classed as a tree, *D. arborea* grows in ironstone in the ranges north of Southern Cross, where many plants are being destroyed by mining.

The soil conditions of dryandras in the wild, however, do not necessarily indicate how they will perform in cultivation. Many are grown very successfully in South Australia and Victoria and at Mount Barker, Kevin and Kathy Collins are growing almost all of the taxa in one of the coldest parts of WA. *D. arborea*, I'm told, is the only *Dryandra* to be grown successfully at Myall Park, in Queensland though it has been grown in a few widely distant places in WA.

Species in the group that includes *D. horrida*, *D. erythrocephala*, *D. vestita* and *D. cynaroides* are proving difficult to cultivate. A notable exception is *D. speciosa*.

Several new dryandras have been discovered recently. Just before the *Flora of Australia* Vol. 17B was published, a CALM officer from Mundaring found a population of an unusual *Dryandra* in Jarrah forest, between Perth and Brookton. It grows in open areas, where granite occurs just below the soil. Alex George named it *D. insulanemorecineta*, (in an island, surrounded by trees). He was going to call it *insulanemorecircumulata* but decided to shorten it!

Two years ago, Fred Hort found a population of about 70 plants of a *Dryandra* similar to *D. armata*, but with long, upright leaves, near Cataby, north of Perth. Alex has named it *D. prionotes* ms. Unfortunately, the flowers were infested with grubs which appeared to be eating the pollen because, as Fred had observed, the pollen was not being picked up by the pistil and 'presented'. I took a few photos in 2002. Last year, however, on three different visits, I was not able to get even one photo as the flowering was even poorer. Since then, rainfall has been good and this *Dryandra*, it is hoped, will flower well this year. Many dryandras, across the State, did not flower at all during the last several years of drought.

Alex has described a few more taxa. The low-growing, blue-leaved form of *D. fraseri* which grows on the Northern Sandplain, Badgingarra and to the north and east of Eneabba, with crowded leaf-lobes, is *D. fraseri* var. *crebra* ms. The form from the Mount Lesueur area, with triangular leaf-lobes and large bracts, known locally as the 'Black Dryandra', because of the conspicuous bracts covered with black hairs, is var. *effusa*.

A form of *D. pteridifolia* from around Newdegate, with a 'shaving brush' type inflorescence and miniature floral leaves, like *D. fililoba* but almost prostrate, with a lignotuber, is *D. pteridifolia* subsp. *inretita* ms. Unlike subsp. *pteridifolia*, it flowers in spring, like subsp. *vernalis* which occurs near Mogumber and Badgingarra but has also been found in the Perth area. *D. pteridifolia* subsp. *pteridifolia* grows in the

Fitzgerald River National Park and south of Newdegate and flowers in April. Unlike all but *D. shanklandiorum*, in this group, it has flowers in which the pistil, with a shorter pollen-presenter elongates and is strongly bowed rather than shorter than the perianth and straight, like the 'shaving brush' inflorescence typical of the other taxa in the group.

Another newly described *Dryandra* is *D. ionthocarpa* subsp *chrysophoenix* ms., of which, more later.

A form of *D. nivea* from Morangup, is still not separated, nor is a newly discovered *Dryandra* which seems to have affinities to *D. aurantia* but has been included in Alex's description of *D. pteridifolia* for the moment. This one occurs in a Reserve south east of Brookton. Both are very attractive plants, in cultivation.

While I was visiting the Cranbourne plantation, in July 1990, with Tony and other Study Group members, I noticed a row of neat, rounded plants of *D. subpinnatifida* in flower. In the next row, was a taller plant, still in bud, which looked like the form I'd seen in Dryandra Forest. When it came to Alex's attention, he looked at the Herbarium collections and was able to separate the species. The July-flowering mounded one without a lignotuber is now var. *imberbis*. But - there are also intermediates. I was lucky enough to have one of these in my garden, grown from seed in the Study Group seed bank, that I had 'inherited'. Unfortunately the plant died suddenly, while in full flower. I have not been able to relocate any intermediate plants that have been collected, in the wild. Val Crowley, a Study Group member from Darkan has discovered two populations of var. *imberbis* west of Darkan, and it also occurs near Boddington, further north. Unfortunately, this beautiful plant, a very desirable garden subject, is in danger of extinction because of another *Dryandra* - *D. squarrosa*. In the wild, they grow alongside one another and *D. squarrosa*, being a prolific seeder which sheds its seed annually, colonising an area after disturbance, is hybridizing with *D. subpinnatifida* var. *imberbis*. I have noticed the same thing occurring with var. *subpinnatifida*, as well, where it grows in Dryandra. Disturbance to these populations, whether caused by clearing for tracks or by fire, contributes to hybridization. Pure forms of var. *imberbis* are rare in a population. Contamination by *D. squarrosa* is indicated by the prickly lobes on the blade of the leaf. *D. subpinnatifida* has narrow lobes on the petiole only.

Incidentally, I have never heard of *Dryandra* hybrids occurring in a garden situation, except those that arose in the garden of Ken Stuckey after it was destroyed by the bushfires in 1983.

Peter Luscombe, of Nindethana Seeds, discovered a new *Dryandra* at Kamballup, south of the Stirling Range, but it wasn't until he showed it to me and I collected a specimen, in 1988 that it was 'official'. This is *D. ionthocarpa*, restricted to a spongolite cliff-top in a Town Reserve. (Land set aside, in the past for a town that didn't happen). The *Dryandra* was quickly classified as Rare Flora.

Just before the *Flora of Australia* went to print, another population of *D. ionthocarpa* was found in a reserve, near Brookton and it was included in the description. Together with other Study Group members, I made several trips to the reserve and located the plants. On a day when we calculated that they would be flowering, Shirley Loney and

I drove out to photograph them. As we approached the tiny town of Aldersyde, we came to an open space on the outskirts (another Town Reserve, apparently), which had similar plants and a general 'look' to the reserve we were heading for, 11km further on. I pulled over to the side of the road, jumped a ditch and found the *Dryandra* at my feet! The area had been burned the previous year – and quite frequently before that, I suspect. It was quite obvious that these plants had re-sprouted – unlike those at Kamballup, hundreds of kilometres to the south, these plants had underground stems. I searched for a plant that might have been missed by the fire and eventually found one with some seed capsules. As far as I know, none had been collected from the plants in the original location and though I was able to illustrate the follicle and seed, the seed was not viable. The leaves are stiffer and slightly different in shape from the Kamballup plants and the flowers have a glorious, golden limb, rather than straw-coloured. Alex has called it *D. ionthocarpa* subsp. *chrysophoenix* ms, (*chryso*-gold and *phoenix* for purple-red, the colour of the perianth but in this spelling, also refers to the fabled bird that lives through fire). The plants that we had set out to see, in the reserve further on, were not as healthy looking and flowering poorly in comparison to our newly discovered ones.

For a long time I have been concerned about another declared Rare *Dryandra*, *D. aurantia*. This is also a recently discovered species, in a Conservation Area. Because, like *D. ionthocarpa* subsp. *chrysophoenix* ms., it also has underground stems, the number of plants in a population has never been accurately assessed. Where someone has counted or estimated hundreds of individual plants, there may, in fact, be only one or two. The reason is that whenever the plants have to re-sprout, and in some places, where fire is too frequent, that is far too often, they do so at the ends of their underground branches. The older the plant, the further away these clumps which look like seedlings, will be from the main stem. So there could be a few, widely separated clones and not a population of many plants as it would appear. This could account for the low seed production and/or the non-viability of the seed.

As well as these two examples, there are about 25 other dryandras that have underground stems and a horticulturally desirable prostrate habit, making them ideal ground-covers. The foliage alone is quite beautiful and the new growth soft, hairy and colourful in most species.

*D. porrecta* is unusual in having the flowers underground at the ends of many stems. It flowers in June-July but on a mature plant they are not visible. A few others produce their buds under the ground, then the flowerheads emerge around the perimeter of the plant. Other species with this habit are: *D. obtusa*, *D. lepidorhiza*, *D. lindleyana* with several subspecies, *D. ferruginea* subsp. *chelomacarpa* and subsp. *flavescens*, *D. bipinnatifida* and *D. calophylla*.

One of the first and best things I did when I came to Perth, 30 years ago, was to join the Wildflower Society as I've always had a passion for wildflowers. Then, some years later, I decided to join the Dryandra Study Group. My mother, still living in NSW had taken up Floral Art and I was growing several dryandras to supply her with dried material. When Keith Alcock, the leader of the Study Group came to visit me in the early eighties, he showed me the specimens he'd collected. They all looked the same to me and I thought I'd never be able to sort them out. Gradually, with the help of Wildflower Society and Study Group members and botanists, Alex George, in

particular and the good fortune to be able to explore the bush and seek out dryandras, I have learned a lot. It has been a wonderful experience, especially the many field trips with marvellous friends and getting to know many beautiful places, and people in country Western Australia. Almost every trip results in a new discovery, a new taxon (rarely), hybrids or at least range extensions.

*D. longifolia* subsp. *archeos* was only known from Mount Ragged, in the Cape Arid National Park until, in 2002, Brian Moyle and I managed to get to The Diamonds Hill, further to the south-east and we found it there as well. Also in the National Park, I have collected *D. nervosa* and *D. falcata*, neither of which had been collected so far east. The latter was collected by Robert Brown at Lucky Bay, but not seen there since.

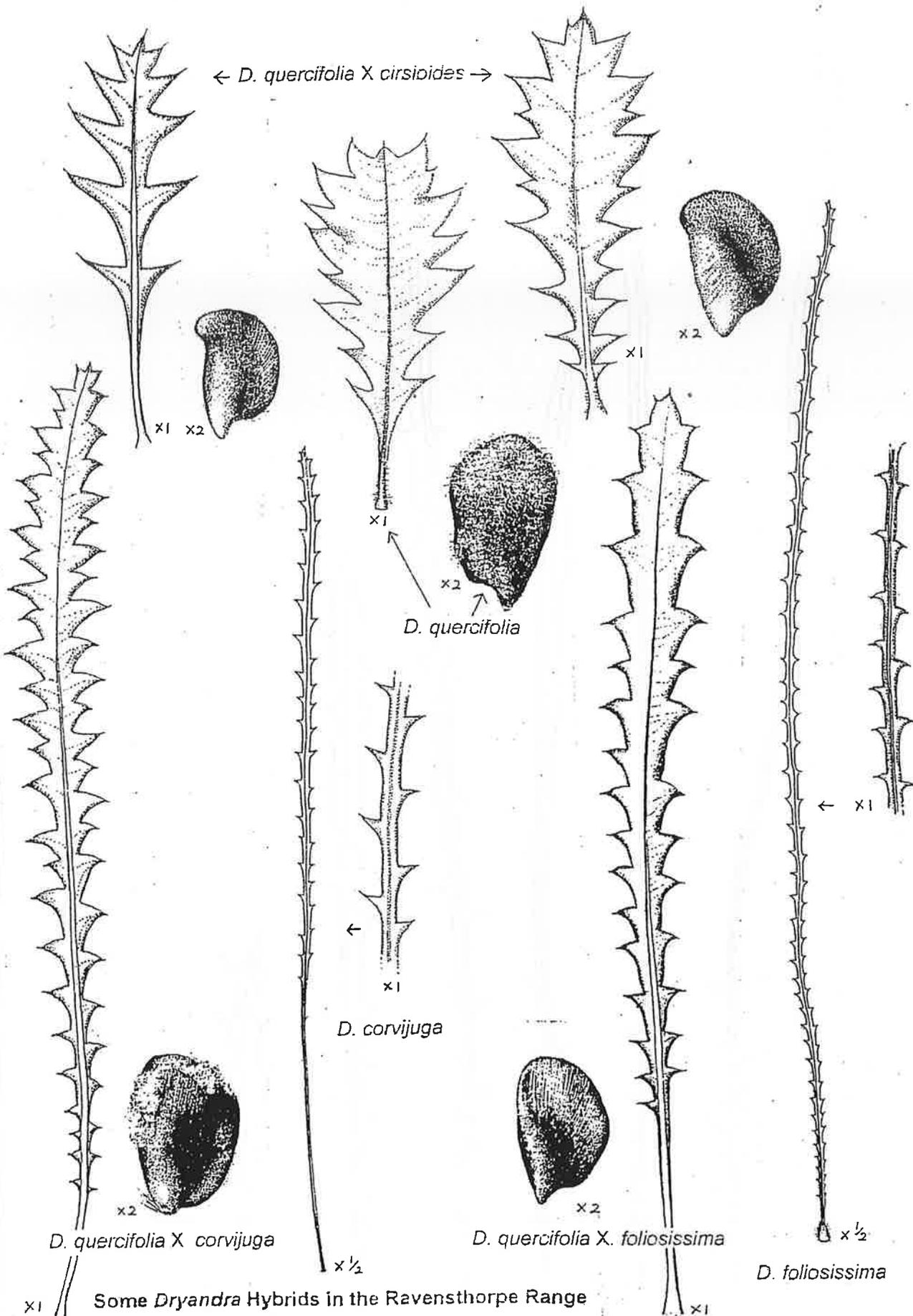
In April, last year, 2003, we went to the Ravensthorpe and Cape Arid areas but, because of the drought, no dryandras were flowering. We hoped to see both *D. quercifolia* and *D. pteridifolia* in flower at No Tree Hill, south of Ravensthorpe but without success. Instead, we found a hybrid of the two species. Though it also was not flowering, we found old flowerheads from two previous years.

We are finding more hybrids all the time. As I said, disturbance, particularly fire encourages them but also destroys them. In the Ravensthorpe Range there used to be *D. quercifolia* X *corvijuga* and *D. quercifolia* X *foliosissima*. A fire in the summer of 2000-2001 destroyed them. None of these is a re-sprouter. There are hybrid swarms in the area, as well – crosses between *D. quercifolia* and *D. cirsioides* and *D. pallida* and *D. cirsioides* and in the nearby Fitzgerald River National Park, *D. cirsioides* X *cuneata*.

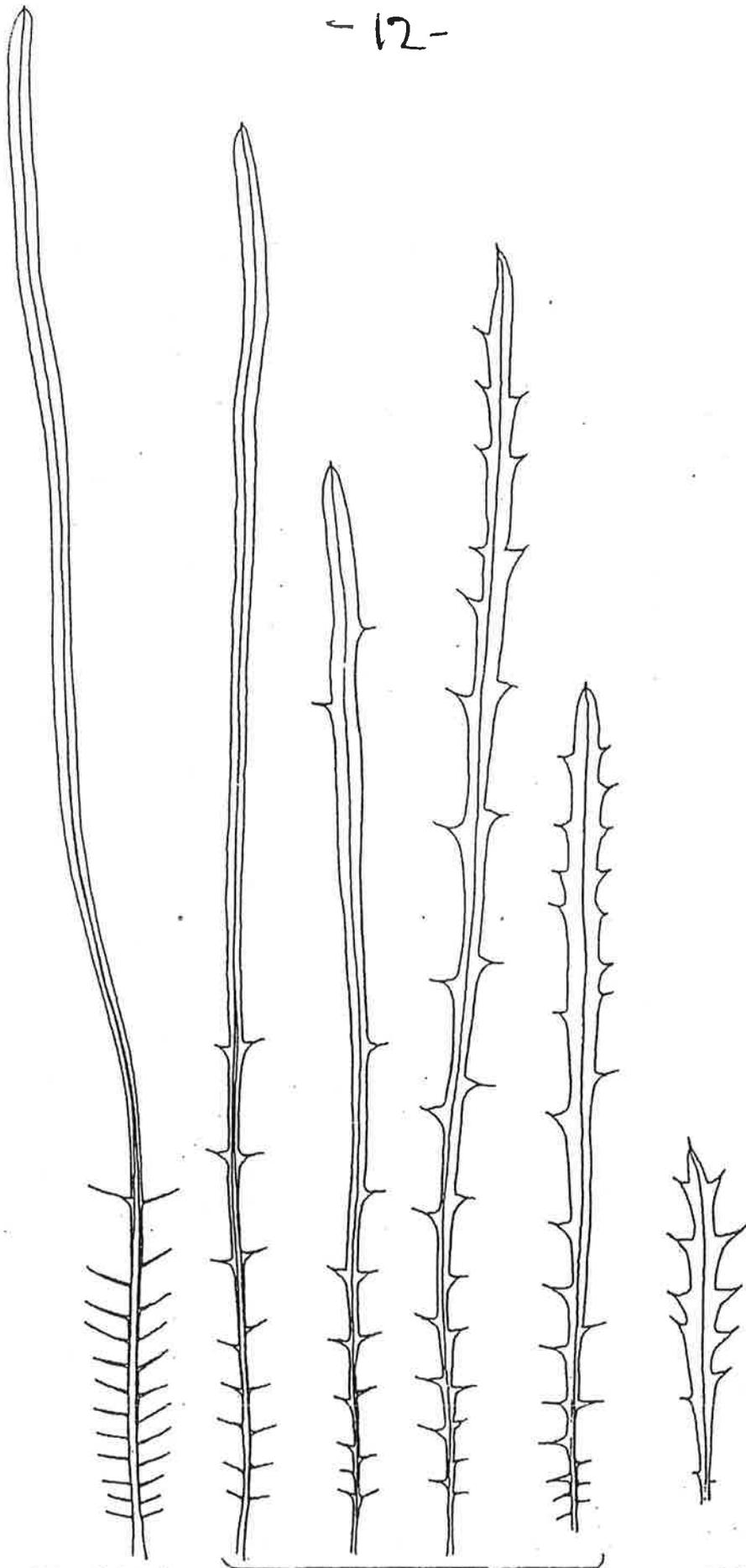
In some of our Wildflower Society Surveys, around Harrismith we have collected a *Dryandra* that appears to be an intermediate between *D. purdieana* and *D. cirsioides*. The type of *D. purdieana* occurs east of Wongan Hills and that of *D. cirsioides*, around Jerramungup, far to the south. In the middle, around Harrismith and Corrigin, they mix, making identification difficult. Other species in *Dryandra* do the same thing across their ranges.

Another of our interesting discoveries is a prostrate form of *D. cuneata* on the south coast. Like the 'coastalised' (to quote a fellow amateur botanist), *Banksia media* from further west, it retains its ground-hugging habit in cultivation.

Margaret Pieroni 9/4/04



Some *Dryandra* Hybrids in the Ravensthorpe Range



*D. subpinnatifida* var. *imberbis*

Hybrids

*D. squarrosa* subsp. *squarrosa*

### More Discoveries

Early this year, in response to a request from Tony for the latest information regarding the conservation status of *Dryandra*, I sent to the appropriate CALM department for the list of Declared Rare and Priority species. I was surprised to find the location 'Kirup' against the rare *D. aurantia*. It was originally found near Little Darkin Swamp, east of Perth, about 200 km, in a straight line, north of Kirup. I am very familiar with the habitat of *D. aurantia*, having made the first collection of it in flower after several visits to the location. I resolved to see for myself whether the 'Kirup' *Dryandra* is *D. aurantia*, or not.

I contacted the botanist who had collected the specimen in August, 2000, after it had finished flowering. Through him I was provided with the exact location which proved to be closer to Boyup Brook and not too far from Darkan, where our member Val Crowley lives. Val has made extensive collections of plants in the surrounding West Arthur Shire and we have had several very enjoyable and productive *Dryandra* trips in the past, so it was great to have another excuse to meet up with her and spend the day in the forest. The 'aurantia' location is just outside her shire.

It was April, the flowering month for *D. aurantia*. We drove to the nearest point on a back road and then walked about a kilometre into the Jarrah forest until we reached the location with the help of an indispensable GPS device. There was no sign of a prostrate *Dryandra* there but just in front of us was a flat, sandy, winter - wet area with grassy and short, bushy vegetation, which reminded me of the Little Darkin Swamp habitat. I was so sure that we would find the *Dryandra* there, rather than in the Jarrah forest that we spent too much time looking for it... in vain.

We had arrived at the position according to the latitude and longitude recorded by the collector. His description was of large patches of the *Dryandra*, forming the dominant understorey. I'd been given two GPS readings and it occurred to me that the second one could be a correction since an adjustment was made to the units a few years ago. That turned out to be the case but, meanwhile we had run out of time to investigate the second location.

The forest is Jarrah/ Marri which has been extensively logged. There are many plantations of Eastern States eucalypts in the area. *Dryandra lindleyana* subsp. *sylvestris*, ( the southern form with short, wide leaves with fine, narrow lobes) and *D. bipinnatifida* subsp. *bipinnatifida* are common, on the forest floor.

We returned to Val's place, feeling quite disappointed though we had enjoyed our day out. That evening I went through Val's collection of local *Dryandra* specimens, making notes of the locations for the maps, for 15 taxa, including a range extension for *D. acanthopoda* that she has found. She had told me about one that she hadn't had identified and I wondered whether it could be *D. aurantia* from another location. When I saw it, however, I took it to be *D. porrecta*, albeit a more robust specimen than usual. I assured Val that it grows just like that further south, for instance, at Mount Barker. Val has collected *D. porrecta* and has had it growing in her garden. The larger specimen had been collected by a friend, further west, towards where we had just been.

Brian Moyle offered to go back with me, to try again but the soonest we could go was early in June. Val had left for a holiday in warmer climes so Brian and I allowed ourselves plenty of time to search by planning to stay the night at Boyup Brook. The day was overcast and it rained heavily that night and the next day so we were lucky not to get wet while walking into the forest. As it was too late for *D. aurantia* to be in flower and in order to lighten the load, I decided to leave my camera in the car.

We reached the first location and then struck out for the second one which was only about 200m further on. I was disconcerted to find that we were heading into the forest again, not down into the sandy, open flats but, as we approached the spot we saw that an area had been marked out with pink ribbon. There was the *Dryandra*, just as it had been described, growing in a clearing in the Jarrah forest! The plants had been taped soon after they were discovered, I learned later, so that they wouldn't be disturbed by the loggers.

My first remark, on seeing the plants was: "Oh, no, we've come all this way and it's only 'porrecta'" but...they were in flower! We had arrived at the right time for the flowers though there were not very many of them. They are just like those of *D. aurantia* – the same glowing orange colour that fades quickly after the specimen is collected. The leaves, however are quite different. They are longer and dark green rather than blue – grey and the lobes are more triangular, especially near the top of the blade. Each lobe twists to the horizontal and the leaves themselves are spirally twisted. Unlike *D. porrecta*, the flowerheads are above the ground but are not produced in such numbers. It seems to be intermediate between *D. porrecta* and *D. aurantia*.

The weather improved so we walked all the way back to the car for the camera. The sun appeared in time for me to photograph the plants. I couldn't help thinking that if Val and I had found them in April, I might still think they are *D. porrecta* because they wouldn't have been flowering!

#### *Dryandra* sp. "Boyup Brook"

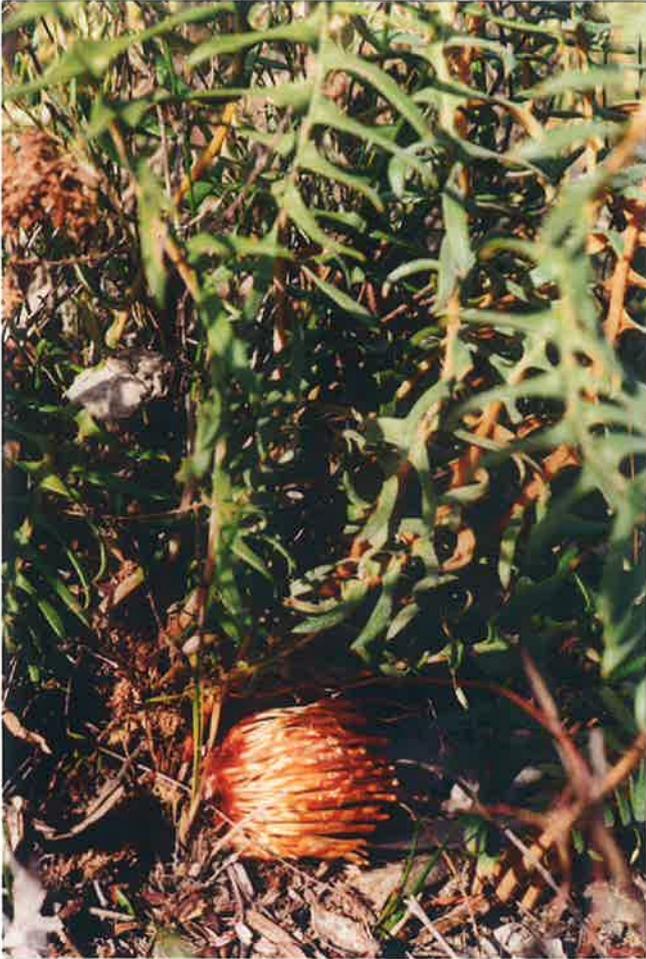
This is the as-yet un-named *Dryandra* in Margaret's article above. The taxon was collected by Lee Sage in 2000 and identified as *D. aurantia*. It has similar orange flower heads with fewer flowers but more than those of *D. porrecta*. The leaves, however, are similar to those of *D. porrecta*, longer than those of *D. aurantia*, and dark green rather than blue-grey. The lobes are more triangular, especially near the top of the blade. Each lobe twists to the horizontal and the leaves themselves are spirally twisted. Unlike *D. porrecta*, the flower heads are produced above ground but not in such numbers. It seems to be an intermediate between *D. porrecta* and *D. aurantia* and requires further study.

#### *Dryandra fasciculata*

*Dryandra fasciculata* is in Series Obvallatae, which includes *D. conferta* and closely resembles this species in habit.

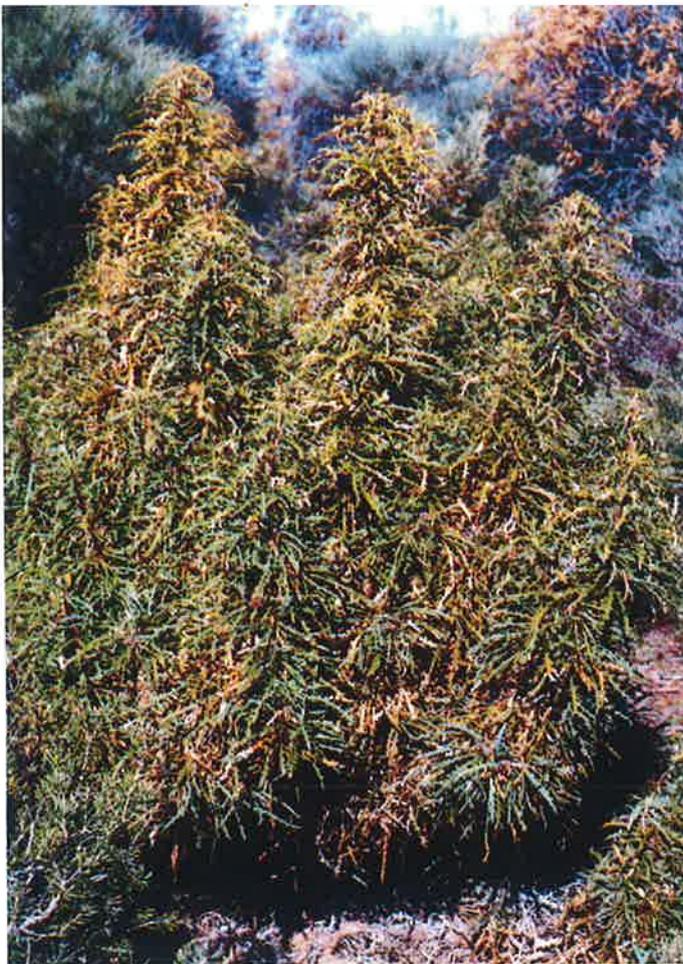
It is a columnar shrub to 1.5m. with silky-hairy stems and crowded leaves with long, overlapping petioles which are hairy at the base. The pistils are down-curved and longer at the top of the inflorescence, like those of *D. conferta*. The pollen presenters are red. The involucre bracts are long, narrow and silky-hairy. The seed follicles are similar to those of *D. columnaris* and are a good identifying feature. I describe them as being about the same size and shape as a human front incisor tooth. The follicles of *D. seneciifolia* and *D. rufistylis* are similar to each other, being narrowly ovate and quite distinctive.

*D. fasciculata* occurs in a fairly small range from Corrigin to Kukerin, growing in laterite gravel with other *dryandras*. It flowers in July – August.



*Dryandra* sp. 'Boyup Brook', June

*Dryandra fasciculata* Corrigin, July



## Report on the Banksias and Dryandras Fred Rogers Seminar 2004

This was held in the Victorian town of Colac over the weekend of the 4<sup>th</sup> and 5<sup>th</sup> of September and was organised by the Colac-Otway APS in collaboration with APS Victoria. The Seminar is run every two years by APS Victoria and commemorates pioneer native plant enthusiast Fred Rogers who had a special interest in banksias and later dryandras and was a member of the Dryandra Study Group. I think that everyone who attended will agree that it was a fabulous weekend, very well organised with no hitches (no small feat with over 160 attendees) and Brendon Stahl and the organising committee are to be congratulated on running one of the best plant seminars that I have attended.

Both Margaret and I were speakers and I have reproduced our papers in this Newsletter; I hope that you find them of interest. I have also included the list of papers that were presented on the Saturday (Sunday was devoted to garden visits) and they cover a wide range of interesting topics. Cas Liber for those of you who don't know is leader of the *Banksia* Study Group. There was some interesting discussion about a proposal from an overseas botanist who as a result of detailed DNA and other non traditional studies concluded that *Dryandra* is actually a subset within *Banksia* and not a separate genus at all! I believe that there needs to be more work on a much wider range of *Dryandra* species before this conclusion can be substantiated (further studies are underway right now) but it does show how nothing stays still in the plant world. Brendon has a small number of copies of the seminar proceedings available at \$10.00 plus \$3.45 postage and if you would like one, his address is:

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Dryandras were a little outgunned by the Banksias but many of us grow both genera anyway and it was interesting to see that many propagation techniques apply to both. One of the most active sessions was the Propagation Panel and questions on Banksias and Dryandras after lunch on the Saturday. Panel members were Rodger Elliott, Kevin Collins, Mark Ross (a grafting specialist) and myself. We all fielded questions, Kevin with his background at Banksia Farm where he grows all the Banksias and most Dryandras being equally at home with questions about either genus. What was so good about the session was the audience participation as there were many experts present and quite a few conflicting views, notably about whether gels, powders or liquid rooting hormones were best for cuttings. Kevin also advocated use of unprocessed natural honey for cuttings although I must say that I have not had a lot of success so far. The session could easily have gone two hours rather than the one which was allocated; perhaps organisers of these seminars should allow more time for panel discussions as the audience seem to appreciate the opportunity to raise questions and issues and discuss them rather than just listen to presented papers.

It was good to catch up with quite a number of Study Group members who also took the opportunity to “buy up big” at the plant table. The plants were propagated by the Geelong APS and probably 600 banksia and dryandra plants were available for sale. We had about 35 *Dryandra* species, some unfortunately only in small numbers, but they proved a hit. Margaret provided much of the seed so at least all the plants sold were correctly named. There is still a problem in the nursery industry as we saw when we visited one of the gardens on Sunday. He had about 8 *Dryandra* species and all but two were incorrectly named. One of the sheets I produced for the Seminar listed Dryandras for specific situations, problem species (ie unreliable or hard to keep alive in the ground) and as a result of a query from a nurseryman, a “top ten” small species (less than one

metre). I have included this in the Newsletter but both Margaret and I would be interested in comment. It is sometimes difficult to make generalisations for the whole of Australia but the lists are based on reported experiences from a number of areas. Please let us know if you think any of the information is glaringly wrong.

As is usual with such plant meetings, they were a great opportunities for growers from different areas and old friends to catch up and compare notes. There were huge floral displays of banksias and dryandras arranged by members of Warrnambool APS and Kevin Collins and Royce Raleigh had brought flowering *Dryandra* specimens, including many of the uncommon ones, perhaps up to 50 species, so that participants could compare them with the banksias but also see the differences. It was a great and worthwhile weekend and I personally would like to thank Brendon Stahl and the Colac-Otway Group for organising it.

Tony Cavanagh

### Dryandras for Some Specific Situations and Problem Species

Grow well in sand	Good in heavier soil*	Slow to Establish	Difficult/Impossible
<i>arctotidis</i>	<i>arctotidis</i>	<i>arborea</i>	<i>aurantia</i>
<i>baxteri</i>	<i>baxteri</i>	<i>armata</i> both vars	<i>comosa</i>
<i>brownii</i>	<i>brownii</i>	<i>bipinnatifida</i> both sub.	<i>corvijuga</i>
<i>calophylla</i>	<i>carlinoides</i>	<i>corvijuga</i>	<i>cynaroides</i>
<i>columnaris</i>	<i>cuneata</i>	<i>echinata</i>	<i>erythrocephala</i> both
<i>conferta</i>	<i>erythrocephala</i>	<i>epimicta</i>	<i>horrida</i>
<i>cuneata</i>	<i>ferruginea</i> forms	<i>erythrocephala</i> both	<i>nana</i>
<i>drummondii</i>	<i>foliosissima</i>	<i>ferrug. sub. tutanning</i>	<i>preissii</i>
<i>foliosissima</i>	<i>formosa</i>	<i>horrida</i>	<i>sclerophylla</i>
<i>lindleyana</i>	<i>fraseri</i>	<i>kippistiana</i> both	<i>tortifolia</i>
<i>longifolia</i>	<i>hewardiana</i>	<i>lindle. sub. agricola</i>	<i>tridentata</i>
<i>nivea</i>	<i>lepidorhiza</i>	<i>nana</i>	<i>xylothemelia</i>
<i>nobilis</i>	<i>lindleyana</i>	<i>pulchella</i>	
<i>obtusata</i>	<i>longifolia</i>	<i>shanklandiorum</i>	<b>"Top Ten" small sp.</b>
<i>quercifolia</i>	<i>mucronulata</i>	<i>shuttleworthiana</i>	<i>brownii</i> *
<i>serra</i>	<i>nervosa</i>	<i>subulata</i>	<i>carlinoides</i>
<i>speciosa</i>	<i>nivea</i>	<i>vestita</i>	<i>drummondii</i> forms
<i>squarrosa</i>	<i>nobilis</i>	<i>viscida</i>	<i>kippistiana</i>
<i>stricta</i>	<i>obtusata</i>		<i>nervosa</i> *
<i>stuposa</i>	<i>plumosa</i>		<i>nivea</i> forms*
<i>subpinnatifida</i>	<i>polycephala</i>		<i>obtusata</i>
<i>subulata</i>	<i>porrecta</i>		<i>porrecta</i>
<i>tenuifolia</i>	<i>praemorsa</i>		<i>subpinnatifida</i>
<i>tridentata</i>	<i>proteoides</i>		<i>subulata</i>
<i>vestita</i>	<i>serra</i>		
	<i>serratuloides</i>		
	<i>subpinnatifida</i>		
	<i>subulata</i>		

\* = Well drained or open textured soils

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## NOTES FROM MEMBERS

(From Rod Sutherland, Natimuk, Victoria, September 2004)

I have retired on a nine and a half acre block adjacent to the Tooan State Forest in western Victoria, 46 km west of Horsham. It is an area of sandy, acid soil where I am growing a variety of native plants.

The last seven years have been the driest on record and as a result, my garden has suffered. The great survivors have been dryandras and banksias which I do not water at all. In the early days, I found that watering did more harm than good. Although slow to grow with no watering, they are surviving well. My favourites are *D. formosa*, *D. plumosa* and *D. speciosa*, all of which have thrived. I regard *D. formosa* as one of the most beautiful of all native plants. Others which I have are *D. drummondii*, *D. fraseri*, *D. nivea*, *D. polycephala*, *D. praemorsa*, *D. quercifolia* and *D. sessilis*.

They have not been easy to establish but it is more satisfying when they do. They blend in well with other native plants, tolerate frost and have fascinating leaf variations. Although some become untidy and scruffy with age, like human beings, pruning (cosmetic surgery) can improve their appearance.

Thank you for the interesting newsletters which are most helpful.

(Glad the newsletters are helpful, Rod and thanks for letting us know how and which dryandras succeed in your area. Ed.)

(From Hartley Tobin, The Gurdies, Vic., July 2004)

Here is a brief run down on how things are going at The Gurdies.

Our dryandras are down to four. The last *D. praemorsa* (self sown) died last summer. It was struggling against some very dominant *Callitris*. A seedling *D. fraseri* (the seed came from the Victorian seed bank) is looking healthy and the rabbits are leaving it alone. My *D. calophylla* is a couple of years old and only adds a few leaves each year but it seems healthy enough. There are two *D. polycephala* which are about 6 or 7 years old. They are strong, healthy plants which survived a trial planting for cut flowers. They flower well each year and produce plenty of seed – which I usually miss collecting. Also the girl who cuts and buys our flowers doesn't want to have anything to do with them.

Our main dryandras are about 30 *D. formosa* which we use for cut flowers. The three oldest bushes are about three metres tall and have become straggly and are beyond producing useful cut flowers. The other bushes we are trying to keep to about two metres tall and they are providing us with some excellent cut flowers. Flowering time varies across the bushes with the early ones sometimes flowering in May while others can be as late as August. Although all the plants are descendants of the first ones I grew here 21 years ago, there is quite a variation in the colour of the flower bracts. It ranges from pale yellow which is hard to distinguish from the colour of the developing flowers to a very rich brown which stands out in striking contrast with the flower colour. We do lose one or two bushes each year (it's hard to know why) so I just keep replacing them with what I grow from seed.

(Thanks for the information about the variation in bract colour, Hartley. Have you thought about growing some of your better forms from cuttings? Ed.)

(From Hans Griesser, Gumeracha, South Australia, August, 2004)

I planted most of the seed I received from Margaret in April as this is supposed to be the best time for sowing. A good percentage has germinated, the little plants are looking fine although they have not grown much due to the relatively cold winter. They are in an unheated shed under a clear roof sheet.

I was very pleased with the information on dryandras and frost resistance in the last Newsletter. However, I have decided not to risk vulnerable plants and instead have protected potentially frost-sensitive plants this winter by surrounding them with plastic bags (the tough bags the chicken feed

comes in are ideal, cut to size). With banksias, it seems that frost – cold air flow – damages stems that have not become fully hard, and the same might happen with young dryandras.

(Please keep us informed about the frost situation, Hans – Ed.)

(From Liesbeth Uijteawaal-de-Vries, Neer, The Netherlands, September 2004)

Please find enclosed my subscription for the Dryandra Study Group. I would like to join the group as I am becoming more and more interested in *Dryandra*. They are a lovely group of plants and they do surprisingly well in this wrong side of the world.

I have been growing Australian plants since 1993, starting with *Callistemon*, *Eucalyptus*, *Melaleuca*, *Correa*, the odd *Grevillea*, *Acacia* etc. Since I became a member of APS Victoria in 1997, my collection has increased considerably. I learned to grow the more difficult plants like *Banksia* of which I now have over 45 species, some 10 in flower. The majority of my *Banksia* collection was sown in January 2003 and most of these have not yet reached flowering stage.

Encouraged by my success with banksias, I began growing dryandras last year. They are growing surprisingly well and they are beautiful plants so I feel I should concentrate on them a little more. The ones I have growing so far and their size are:

*D. drummondii*, germinated April 2003, now 40 x 50 cm

*D. ferruginea* {large flowered form, I have been told by Margaret that this is subsp. *tutanningensis*}, germinated April, 2004, a rosette with some 12 leaves

*D. formosa*, germinated May 2003, 80 x 40 cm

*D. nivea*, given as a small plant November 2003, 20 x 40 cm

*D. nobilis*, germinated February 2004, 20 cm

*D. praemorsa*, bought as a small plant, August 2003, 130 x 70 cm

*D. praemorsa*, germinated October 2003, 60 x 30 cm

I am hoping to increase this number now that I am a member of the Study Group. All my plants are grown in pots since they couldn't survive in the garden due to our cold winters. They hibernate in a frost free glasshouse over winter but in summer they are put out in the open. I'll send some photos to give you an impression of the plants (*and also of your glasshouse setup, Liesbeth so we can see how you grow so many plants – Ed.*).

November, 2004.

I have had great trouble in reducing the list of species that I would like to try from seed as there seem to be so many mouth-watering ones! Two that I have requested, *D. quercifolia* and *D. obtusa*, I have tried before but they didn't germinate. They don't need any special treatment do they? – maybe the seed was too old. (*Yes, that is most likely. Good seed of both should germinate in five to eight weeks – Ed.*) My *D. drummondii* (above) has interesting swollen structures which I would love to be buds but perhaps that is too much to hope for. It now has a little brother/sister from a seed that took 14 months to germinate! I usually pre-germinate my larger seeds in a plastic container, between sheets of sturdy, moist kitchen towelling. That way it's easy to check the seeds regularly, keep them for a long time without too much care if they don't germinate and discard any seed that is going mouldy. Germinating seeds are transferred to small pots with (low nutrient) potting mix.

Both my *Banksia victoriae* are producing their first "cones". It is so exciting to see how they develop! One has opened its first flowers now, a beautiful rich orange surrounded by woolly grey leaves – very spectacular. Occasionally we can buy them here as cut flowers but then the long leaves are cut to make them easier to handle – sacrilege! Will keep you posted on the progress of the dryandras.

(Liesbeth, it is great that you are having so much success growing dryandras the "old" way, in pots in glasshouses, and welcome to the Study Group. We look forward with interest to hearing how you go

and learning which *Dryandra* flowers first. When you have the time, perhaps you could tell us a little more about the potting mix you use and the trials and troubles of growing a large number of sometimes fussy plants in pots eg how frequently do you repot, how much pruning do you do, how do you handle the larger pots, how much watering, both in winter and in summer, etc. - Ed.)

(From John Armstrong, Rye, Victoria, August 2004)

Just a short note to let you know how the seeds I planted in April have performed. I seem to have had a good strike of those varieties that germinated but others did not germinate at all. I checked some seed of the latter and they appeared to be unviable. After they germinated, suddenly some were defoliated and seeds disappeared before I noticed. I saved a lot and on the brighter side, I now have many dryandras that I didn't have before and am looking forward to growing them on. My results are:

**Seeds sown April, germination results for 12/7/04**

Species	Study Group		Nindethana	
	No. sown	No. germinated	No. sown	No. germinated
<i>arborea</i>	2	1		
<i>armata</i>			8	1
<i>baxteri</i>			8	-
<i>bipinnatifida</i>			2	1
<i>borealis</i> subsp. <i>borealis</i>	6	-		
<i>carlinoides</i>			5	1
<i>cirsiooides</i>			6	4
<i>comosa</i>			4	-
<i>conferta</i>			8	damaged
<i>cuneata</i>	5	1 (damaged)	5	3
<i>drummondii</i> *	11	7	4	1
<i>erythrocephala</i>			6	-
<i>ferruginea</i>	7	1		
<i>formosa</i>	8	damaged	9	4
<i>fraseri</i> var. <i>ashbyi</i>			5	-
<i>fraseri</i> var. <i>fraseri</i>	5	4		
<i>hewardiana</i>			5	-
<i>horrida</i>			4	-
<i>ionthocarpa</i>			3	-
<i>longifolia</i>	7	6	4	-
<i>lindleyana</i>	5	1		
<i>mucronulata</i>			6	-
<i>nivea</i>	6	4	4	-
<i>nobilis</i>			4	damaged
<i>obnusa</i>	4	4	4	-
<i>polycephala</i>			5	2
<i>praemorsa</i> **	4	-	5	4
<i>preissii</i>			3	-
<i>pteridifolia</i>			3	-
<i>proteoides</i>			5	-
<i>pulchella</i>			4	-
<i>quercifolia</i>			7	-
<i>serra</i>			5	4
<i>serratuloides</i>			4	-
<i>sessilis</i>	26	2	7	-
<i>shanklandiorum</i>	14	7		
<i>shuttleworthiana</i>			7	2
<i>speciosa</i>	6	4	5	3
<i>squarrosa</i> subsp. <i>squarrosa</i>	10	1	6	1
<i>stuposa</i>	8	-	6	2
<i>subpinnatifida</i>			4	-
<i>tenuifolia</i>			8	-
<i>vestita</i>			5	-

\* Results from my own seed, 5 sown but none germinated

\*\* Results from my seed, 18 sown, 10 germinated

## Dryandras Cultivated in the Netherlands during the Nineteenth Century

In Newsletter No. 17 (pp.11-13), the introduction to and cultivation of dryandras in continental Europe was discussed. All told, around 20 species are known to have been grown in gardens in Austria, Italy and Belgium, with a further 10 in Great Britain, in the period up to the 1880s. Because of the climate, all were grown in pots in glasshouses and some are known to have been more than 20 years old. Recently, we have discovered that quite a number of dryandras were also cultivated in the Netherlands, and that specimens from several growers were shown in annual plant exhibitions at Utrecht and Haarlem during the 1840s and 1850s. The following is a preliminary account of what we have discovered so far but undoubtedly further interesting facts will emerge. However, it appears that a wider range of dryandras was grown in the Netherlands than in Great Britain!

The source of dryandras in the Netherlands is largely unknown although Kees Gnirrep of the University of Amsterdam has found that most imported plant material went to the Botanic Gardens first and was then distributed (at high prices) to private growers and nurserymen. So far, we know of more than 20 growers of dryandras and numerous other Australian plants, and many of them, called "florists" were presumably nurseries or seed and plant suppliers. One of these, G. de Groot, advertised as the "florist and Purveyor to the Royal Household of the King and Queen of the Netherlands". Another, C. Glijm, was a major contributor to the Dutch horticultural journal *Neerlands plantentuin* and exhibited at least 15 *Dryandra* species so he seemingly had strong horticultural interests and must have maintained a large collection of plants. In the 1850s at least he appears to have specialised in banksias and dryandras and other Australian plants. Around 1854, florist R.C. Affourtit offered many banksias and dryandras for sale to the Amsterdam millionaire banker and amateur botanist of exotic plants, Adriaan van der Hoop (1778-1854). Van der Hoop typifies the "collector's mania" of this era. Not only did he collect paintings of both Dutch and other European masters, amounting to some 250 items which were later bequeathed to the City of Amsterdam, he also maintained on his country estate at Spaarnberg near Santpoort, a string of racehorses and cultivated exotic plants. One of the first persons in the Netherlands to own a hothouse, he took both his garden and plants very seriously. His small but specialised botanical library was consulted by professional botanists and was used by Van der Hoop to identify the plants from his extensive collections. He corresponded extensively with other growers and nurseries such as Glijm's as well as other botanists, his notes recording a visit from the eminent Robert Brown who helped him identify a *Banksia*. On September 22<sup>nd</sup> 1850, Brown decided that Van der Hoop's "*Banksia marcescens*" was actually *Banksia integrifolia*. He had a special interest in botanical book illustrations and owned some of the finest limited editions with high quality hand-coloured plates. In both 1839 and 1849, van der Hoop sponsored the publication of two scientific catalogues of his plants. Both were called *Hortus Spaarn-Bergensis*, the first being compiled by the Professor of Botany in Amsterdam and later Leyden, Willem Hendrik de Vrieze, while the second which contains his list of dryandras, was produced by an Amsterdam doctor of medicine, Merkus-Doornik who had previously prepared a flora of Amsterdam. Ten species are listed-

*armata, falcata, formosa, "floribunda" (sessilis), longifolia, nervosa, nivea, plumosa, pteridifolia, tenuifolia.*

In the absence of botanical descriptions, we have assumed that the names are correct although it is possible that the *D. pteridifolia* listed might be *D. blechnifolia* as this latter name is included as a synonym. All of these species had also been grown in England and in Hugel's garden in Vienna and it is likely that plants were obtained from English nurseries or by exchange with Hugel and perhaps other botanic gardens. We also know from his notes that on August 22<sup>nd</sup> 1850, Van der Hoop purchased a *Banksia media* from the collection of the late King William II so there obviously was a widespread network of sources. The role of Dutch nurseries as suppliers has yet to be investigated.

A further 18 dryandras are known to have been exhibited up to 1854 in the semi annual plant exhibitions held at Utrecht and Haarlem. Many were from the garden of C. Glijm while other notables and florists included A.H. Metelerkamp, C. de Winter, H. van Lunteren & Son, G. de Groot, J.G. Jongeling and G.W.F. Hoogeveen, all from Utrecht. Seven mystery species appear, "Dryandra imperialis", "D. elegans" (?*B. elegans*), "D. attenuata" (?*B. attenuata*), "D. attenuata vera", "D. superba" and "D. stricta", while the "D. speciosa" listed is actually a horticultural name possibly of English origin; so far, we have not been able to identify any of these. Thus, at least to 1854, around 28 species of *Dryandra* had been cultivated in the Netherlands, many had been flowered and there is the possibility that additional species will be located. The complete list is given below\*\*.

Name & Year Exhibited	Name & Year Exhibited	Name & Year Exhibited	Name & Year Exhibited
"attenuata" (1851)	<i>armata</i> (1844)	<i>formosa</i> (1846)	<i>obtusa</i> (1851)
"attenuata vera" (1851)	<i>baxteri</i> (1846)	<i>fraseri</i> (1846)	<i>plumosa</i> (1846)#
"elegans" (1851)	<i>bipinnatifida</i> (1846)	<i>longifolia</i> (1843)	<i>proteoides</i> (1847)
"imperialis" (1854)	<i>blechnifolia</i> (1843)	<i>mucronulata</i> (1846)	<i>pteridifolia</i> (1844)
"stricta" (1854)	<i>calophylla</i> (1843)	<i>nervosa</i> (1844)	<i>seneciifolia</i> (1851)
"speciosa" Hort. (1851)	<i>drummondii</i> (1851)	<i>nivea</i> (1843)	<i>sessilis</i> (1843)
"superba" (1854)	<i>falcata</i> (1851)	<i>nobilis</i> (1846)	<i>tenuifolia</i> (1846)

\*\*Extracted by Liesbeth from the exhibition lists of the Society for Agriculture and Herbology in Utrecht for the period 1843 to 1854. The date given in brackets is the date a species was first shown; this should be within a couple of years of its introduction to the Netherlands. Some species were shown in six or more shows, often from different exhibitors, indicating that some species were apparently readily available.

#This may not be the *D. plumosa* we know as there was also one listed as "D. plumosa" Hort.

Tony Cavanagh and Liesbeth Uijtewaal

### Acknowledgements.

We would particularly like to thank Kees Gnirrep of the Library of the University of Amsterdam for his continuing assistance in locating lists of plants that were exhibited and in providing Liesbeth with references and sources. We are also grateful to the staff of the Rare Collections Room of the Library for assistance to Liesbeth in accessing the notes of Adriaan van der Hoop and the full lists of the exhibitors to the plant exhibitions at Utrecht. The Library also held an exhibition of items from Van der Hoop's library in October 2004 and the press release was most useful in providing information for this article.

DRYANDRA STUDY GROUP

FINANCIAL STATEMENT 1/7/03 – 30/6/04

Cash at bank at 1/7/03		\$1904.18
Petty cash in hand		29.95
Income	Members' subscriptions	352.00
	Donations	54.00
	Sales of publications etc.	338.90
	Bank interest	5.55
		750.45
	Total	2684.58
Expenditure	Newsletter expenses	550.00
	Seed storage drawers	120.00
	Printing	192.50
	Stationery, postage, photocopying, etc.	69.50
	Bank charges	2.60
		934.60
	Less petty cash in hand	10.45
	Total	924.15
Cash at bank at 30/6/04		1739.53

ASSETS

Newsletters and Occasional Publication No.3 (Illustrated Key)  
Filing cabinet  
5 stackable drawer/boxes for seeds  
Seeds of most spp.  
About 3,000 photographic slides  
Album of photographic prints  
Display of 12 mounted photos etc.

## Dryandra Study Group Members 2004

Keith Alcock, Kalamunda 6926  
Barbara Buchanan, Myrree 3723  
Lloyd Carman, Eden Hills 5050  
Tony Cavanagh, Ocean Grove 3226  
Kevin & Kathy Collins, Mt. Barker 6324  
Dennis Craig, Bunbury 6230  
Val Crowley, Darkan 6392  
Max Ewer, Avenue Range 5273  
Alex George, Kardinya 6163  
Elizabeth George, Alexander Heights 6064  
Hans Griesser, Gumeracha 5233  
David Lightfoot, Surrey Hills 3127  
Adrian Lamande & Mae-Lin Han, Donvale 3111  
Randall Linke, Santa Cruz, USA  
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Sandra Murray, Kulin 6365  
Paul Niehoff, Blackburn 3130  
Bob O'Neill, Wandin 3139  
Ron Pearson, Mentone 3194  
Margaret Pieroni, Attadale 6156  
Rose & Ray Purches, Wangaratta 3678  
David Randall, Cobram 3644  
Peter Ray, Mahogany Creek 6073  
June Rogers, Horsham 3401  
Hugh Seeds, Beverley 6304  
David Shiells, Violet Town 3669  
John Armstrong, Rye 3941  
Jan Sked, Lawnton 4501  
Janelle Speight & Peter Watson, Warrabee 2074  
G. Paul Stain, Bibra Lake 6163  
Rod Sutherland, Natimuk 3409  
Kath Sykes, Hawthorn East 3123  
Lyndal Thorburn, Queanbeyan 2620  
Hartley Tobin, The Gurdies 3984  
Phil Trickett, Ainslie 2602  
Christine Wadey, North Eltham 3095  
Don Weybury, Bacchus Marsh 3340  
Don & Joy Williams, Badgingarra 6521  
Graeme Woods, Gisborne 3437

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