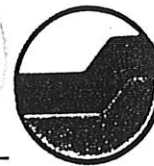
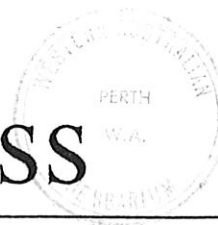


The Plant Press



Western Australian Regional Herbaria Newsletter
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NATURAL HERITAGE TRUST GRANT

Great News!!!

The Natural Heritage Trust has announced its grants and the REGIONAL HERBARIUM PROJECT was successful. Great news after so many tries for funding. Our success was due to all of you who gave letters of support, these clinched the deal because the application was seen as a real prospect which has already made significant progress.

The title of the grant application was Facilitating Plant Identification and Regional Access to Flora Information and asked for and received \$129 000 in the first year to engage staff to work closely with regional groups.

The following points extracted from the submission indicate why we asked for support and how we will use it:

- there are enormous problems facing community conservation groups; there is no complete inventory of WA plants and there are few publications to use for plant identification. Groups have difficulty in obtaining sound botanical advice on environmental issues including remnant vegetation management and revegetation for Landcare; lack of information on flora survey methods, and; insufficient knowledge about recognition of threatened flora and threatened ecosystems
- because of the richness of the flora of WA, especially the south west, as well as the dearth of taxonomists working on WA plants, it is very difficult for any person, professional or otherwise to identify plant species.
- the need to identify species is becoming increasingly recognised because of enhanced community concern about loss of biodiversity, degradation of ecosystems, extinction and problems with developing satisfactory prescriptions for bushland management, including weed identification and control measures and rehabilitation
- there are potential advantages in documenting more about the WA flora; it is now realised that the biota of WA include species of great potential or of real economic value. For example many WA plants are known to have commercial essential oils, anti-feedant compounds and pharmaceuticals such as cosmetics or drugs
- many of Landcare and kindred groups have developed small regional or field herbaria to assist them to identify plants which may be used for rehabilitation, such as salt tolerant plants or native flora with horticultural or economic value or to support information for a nature trail
- the CALM Herbarium has a sophisticated computer system for databasing its specimen holdings
- knowledge of our flora is generally poor and it is estimated that 20% of the identifications we provide are erroneous. Taxonomic studies of the WA flora are progressing with the result that many species and their variants are subjected to name and concept changes
- the specimen identification error rate and changes of names and species circumscription mean that any field herbarium not computer linked to CALM's Herbarium will have less value as an identification tool with time. ie, its collections will have "fossilised" names which will perpetuate identification errors and not enable users to access information

- the only satisfactory way of overcoming the problem of providing "up-to-date" names is to link each specimen in a field herbarium with a "voucher" specimen in the State Collection; any name changes, identification changes etc. can be captured and specimens, even those in remote community groups can be updated accordingly
- a system where field herbaria are linked to the State Collection will also increase the collections of that Herbarium so that it can achieve a more complete range of samples of the flora of the State and provide even more comprehensive information
- in order to develop and service a system whereby country-based groups can effectively develop field herbaria and at the same time enhance the coverage of the State Collection required the services of a botanist team and support staff
- two full-time botanists and one full-time administrative assistant and training officer with current Herbarium staff contribution would provide an adequate service to community groups

Neville Marchant

1997 WORKSHOPS

June to September were busy months with 6 workshops – 4 in the country and 2 in the city. Altogether more than half the Regional Herbaria were represented, some by several people, at these workshops. In addition, a number of participants were Landcare and Shire people not associated with any particular Regional Herbarium.

This was really excellent participation, especially considering the long distances some people had to travel to attend. Rachel Storer of Koorda should get special mention as she attended one of the country workshops and both of the city workshops!

In the country workshops held at Kojonup, Watheroo, Merredin and Boyup Brook we concentrated on the type, size and quality of specimens and the recording of good and full field notes. This is because what the collector observes and records largely determine the future value of the voucher.

I hope that those of you who attended these workshops have been able to pass on your knowledge to all other members in your group. Remember vouchers for the CALM Herbarium need to be larger than for your own herbarium - big enough to just fit into a folded 2 page sheet of The Western Australian. Try to include leaves, bark, buds, flowers and fruit where possible.

For the field notes, follow the instruction on the Guide to CALM Herbarium Collecting Book enclosed in this newsletter. Be very concise about the locality of the voucher using distance, direction from a town or named landscape features, roads etc.

From the questionnaires completed after the workshops,

- meeting and exchanging information with others
- working in the field with botanists
- working in small groups in the field

all seemed to be very beneficial.

Special thanks to all the people involved in the organisation of the country workshops, all of which ran very smoothly.

The city workshops concentrated on the two genera *Acacia* and *Eucalyptus*. Botanists, Bruce Maslin and Ray Cranfield of CALM Herbarium and Peter White of CALM Narrogin discussed the taxonomy of these two genera. In the afternoon, participants looked at the characteristics of the specimens they had brought with them and used a variety of keys for identification of the species.

All participants were given lists of *Acacia* and *Eucalyptus* species known to occur within a 50 km square centred on their town. Thus, Ravensthorpe had 120 different species, subspecies and/or varieties of *Eucalyptus*. These lists were easily compiled from the WACENSUS database by entering the latitude/longitude readings of the four corners of the 50 km square.

For those Regional Herbaria which did not attend the *Acacia/Eucalyptus* Workshop but are interested in having similar lists for their own District, please contact Jan Gathe or your own Volunteer at the CALM Herbarium.

Also, if any of you have ideas for the 1998 Workshops, please let Jan Gathe know, as planning will probably start early in the new year.

Jan Gathe

PRIORITY PURSUIT

I was very fortunate to be invited by Diana Papenfus on a field trip to Lake King in October to search for priority species. The trip impressed upon me the importance of accurate location descriptions when specimens for the Herbarium are collected. The plants we were looking for had been collected only occasionally and previous collections ranged back thirty years. In that time a number of changes have occurred including the change from miles to kilometres. I realised that points such as road intersections can quite easily change and that even the perceived location of small country towns can be changed by something simple like the General Store (the centre of town) being located elsewhere. By far the easiest plants to find were those where accurate latitude and longitude locations were available.

It was also very helpful to know whether the plant was abundant or sparse when previous collections had been made and to have good descriptions of the soil and associated vegetation. We only had photos of pressed herbarium specimens as a guide and so accurate descriptions were a great help.

Kim Macey
Volunteer

REASONS WHY PLANT NAMES CHANGE, WITH SOME RECENT W.A. EXAMPLES

Introduction

People dealing with plants, either as gardeners or as collectors and identifiers, or people who are associated with the Herbarium, will be well aware that the scientific names of plants change. This happens at a significant rate, such that it can be difficult to keep up with the changes. The Herbarium has to keep track of changes in nomenclature because many other people, including conservation managers, other scientists, and industry, rely on the Herbarium's advice and its authoritative list (the Census of W.A. Plants).

It can be unsettling or confusing when the names of familiar plants are changed and people often express dismay or irritation. It is therefore worthwhile to look at some of the reasons behind the changes.

Reasons for name changes

The scientific naming system for plants is intended to provide an agreed standard name for each taxon (family, genus, species, and where required, subspecies, variety etc). The purpose of names is to provide a means of communication about plants, that is, a labelling system. The system of scientific names, however, is also linked to the system of classifying plants, which attempts to group together plants thought to be related according to some criteria. Thus the species names *Eucalyptus marginata* and *Eucalyptus gomphocephala* indicate that the two species belong to the same genus, i.e. they are quite closely related. However it is instantly clear that *Verticordia nitens* is less closely related, because of the different genus name which makes up part of the name of the species. Subspecies (when used) are built into the name too, but other ranks such as tribe or family are not: you have to look these up to work out whether plants are closely related or not at those levels.

Scientific naming is governed by a set of international rules, the International Code of Botanical Nomenclature. It is necessary for us in W.A. to follow these rules if our names are to be accepted by the rest of the World's botanists, so we could not keep our plant names unchanging even if we wanted to. Interstate or foreign botanists can and do alter our plant names as a result of their studies. This is regarded as a matter of international science, and not something completely under our control as is the case for the road rules for example.

One reason for changes in plant names is that someone finds that the current name of a plant is contrary to the International Code. Because the Code states that the oldest name is the correct one in a particular situation, if someone finds a name earlier than the one in current use, then under the rules the older one replaces the later one. It had been hoped that eventually the old names would all be found and this type of change would reduce to a trickle, but it has remained a fairly frequent occurrence, so the Code was changed recently to allow names to be conserved, i.e. protected, against other older names (this has long been the case for genus names).

Another reason for changing names is as a consequence of re-classifying a plant when its relationships are found to be different to what had been thought previously. This is a consequence of having names of species that reflect the classification.

Sometimes when plants are studied across their geographical range, it is found that a single species is known by different names in different states or countries. In that case a single name must prevail, usually the oldest one, of course.

Some examples of recent name changes

Family examples

Many people will have grown up with an old concept of Liliaceae, which covered many of our monocots. In 1982 - 1985 this broadly conceived family was subdivided into a number of families, with most of our genera being placed in Anthericaceae, with smaller numbers in such families as Asphodelaceae, Colchicaceae, Phormiaceae, and Dasypogonaceae for most of the former members of Xanthorrhoeaceae. A fuller account is given in Flora of the Perth Region p. 754-756.

These changes were widely regarded as an improvement because some members of the old Liliaceae were only very distantly related to each other. However there was much uncertainty about the results, and subsequently further changes have been suggested. These include dividing the Dasypogonaceae into two families, Dasypogonaceae (which is now thought to belong in a very different place in the overall classification system) and Lomandraceae, which may also take in some members of Anthericaceae. And this year, a new family, Boryaceae, was created for *Borya*. In these recent changes we are seeing the influence of studies using DNA. We have not yet properly assessed these changes, so they do not yet appear in the Census.

There are some other recently mooted changes at the family level, which shows that taxonomic research is in a very active stage at present, unlike earlier periods when classifications were stable for long periods. An example is the Australian endemic family Chloanthaceae, containing such characteristically Australian plants as *Pityrodia*

(Native Foxgloves), *Lachnostachys* (Lambstails) and *Cyanostegia* (Tinsel Flowers), which is now considered to belong in Lamiaceae, the mint family. In that family they would be placed in the same group as the Australian genera *Prostanthera*, *Westringia* and *Hemiandra*, which are in the tribe Prostanthereae.

Genus examples

This is an active level for changes to take place. Some recent prominent examples follow.

Corymbia is a new genus named in 1995 for 118 species formerly in *Eucalyptus*, including the bloodwoods (such as Marri and Red Flowering Gum), the Ghost Gums of the deserts, and the Spotted Gums of eastern Australia, including Lemon Scented Gum. This change was made because these species were considered, in a long term and thorough study, to be properly placed next to the genus *Angophora* rather than within *Eucalyptus*. It seems unlikely that any further subdivision of *Eucalyptus* will take place in the near future. The common name Eucalypt can still be used for both *Corymbia* and *Eucalyptus*.

Australian *Cassia* species were moved to the genus *Senna* in 1988-1990, following overseas work which considered that the old *Cassia* contained too much variation to be a single genus. *Cassia* is still used for some non-Australian species.

The Speargrass genus *Stipa* was subdivided in 1996 so that the Australian native species were all moved to a new genus called *Austrostipa*. This had been expected for several years, and is based on a study of the Speargrass group world-wide, something which had been neglected for a long time.

Another grass genus to be re-named recently was *Danthonia*, the Wallaby Grasses. However further changes are imminent as a result of errors in the last changes, so bear in mind that this will happen.

In 1989 a world-wide study of *Utricularia* and *Polypompholyx* was published, and from the perspective of studying the full range of species in great detail, it was found that two genera were not justified, so they were combined under the earlier name *Utricularia*.

Species examples

Name changes for species (apart from those arising from subdividing or combining genera as mentioned above) do still occur, although the recently passed rule allowing species names to be conserved even if they are not the oldest, will reduce this. A few examples follow.

The Boab, long known as *Adansonia gregorii*, was found to have an earlier name and this was resurrected in 1995 by an American botanist. It is planned to have the familiar name *A. gregorii* conserved, so this is why it is still known by this name in W.A.

Dryandra nivea was re-defined by Alex George in 1996 to a narrower concept, with 6 species being recognised in place of the single species of the old concept. The species which is to retain the name *D. nivea* is the one which matches the type specimen for that name. Four of the other five species had names available, which had been neglected for many years because at one time botanists were not able to differentiate the species (partly this is due to the type specimens being in Europe or elsewhere in Australia). These old names were revived in a scientific article, and the type specimens used to assign them to the right species. The remaining species had no existing name, so it was described as a new species (see *Nuytsia* 10: 392-400).

Managing nomenclature

The official list of names of plants in W.A. is the Census of W.A. plants, maintained by the Herbarium. The latest version is always available on the CALM computer network, and a book version is planned. Changes are incorporated mainly from published books and papers, and the changes go through a process. There is a close link between the names in the Census and the names on the herbarium specimens. Because regional herbaria duplicate their collections in the CALM Herbarium, the people managing them don't need to keep up with

botanical literature but instead can rely on the Herbarium to keep track and make the necessary changes. Other CALM scientists who have databases containing plants names can also use SEDIT, software written by Paul Gioia (a new version by Paul Gioia and Simon Woodman is called Max), to alert them to names that have changed, i.e. they are non-current. So there is a reasonably good method of maintaining nomenclature. Informing interested community users is, however, something which can be improved, one of the reasons for this article.

Terry Macfarlane

NEWDEGATE RARE FLORA NEWS

The Newdegate Rare Flora Volunteers were formed in 1991 to assist CALM with their rare flora work. The original membership numbered 6 including one botanist. The group successfully applied for a Greening WA regional natural resources identification kit in 1994.

Plant specimens for the Newdegate Herbarium are collected on rare flora excursions. While monitoring known populations of rare flora, our members become familiar with these plant species and as a result, since 1994 we have found 2 new populations of *Tribonanthes purpurea* and new populations of *Myriophyllum petraeum* and *Verticordia staminosa*. Three of these new populations were discovered by members on their own properties.

Since 1994 the volunteers have organised 5 excursions a year on private property and Nature Reserves. These include braving the wind and rain in May 1996 to count the number of *Muehlenbeckia horrida* ssp. *abdit*a on Lake Bryde and East Lake Bryde to provide botanist Karen Wilson with information for her paper describing this new subspecies, which is a CALM priority plant. Also a day of granite, rare orchids and numbats at Dragon Rocks Nature Reserve in October 1997. CALM has recently released numbats back into this area and has a monitoring program in place as part of the Western Shield initiative.

Part of CALM's Western Shield initiative is also to monitor a range of animal capture sites at Lake Magenta Nature Reserve. A new project for the Newdegate volunteers in 1997 and beyond is the collecting of flowering material at the trap sites to provide information on seasonal food sources.

The membership has now reached 11, with another 6 unofficial members who are more interested in the local fauna and join in on excursions where CALM is also involved in trapping local animals. The number of plant specimens in the Newdegate Herbarium is growing slowly with 414 now collected at the end of November 1997. Most of these specimens have been mounted at our yearly workshops but we have yet to tackle "Herbie" and complete our labels.

Contact person for the Newdegate Rare Flora Volunteers is Anne Rick (nee Coates). Phone: 98206048; Fax and Answering Machine: 98206047.

Anne Rick

BOOK LIST 1998

Following is a list of botanical books that assist in the identification of Western Australia's complex flora.

These books can be obtained through the WA Wildflower Society, in most cases with a discount on the prices indicated. Orders can be sent to the following address:

WA Wildflower Society
Attn: Mrs. Barbara Backhouse
Unit 8/38 Ednah Street
Como WA 6152

Important books that are out of print and those very near to publication have been included in this list. For books that prove difficult to obtain, try your nearest Wildflower Society, or your local library with its Interloan System, and they may be able to help.

Author	Title	\$ Retail cost (subject to change)
Bennett, EM (1988)	The Bushland Plants of Kings Park, WA	45.00
Blackall, WE & Grieve, BJ (1988)	How to Know Western Australian Wildflowers Part I	50.00 (now special at \$12.00)
	(1980) Part IIIA (out of print) (1981) Part IIB	35.00
Grieve, BJ & Blackall, WE (1975)	Part IV Part II (early 1998)	40.00 (\$12 special) 80.00 approx.
Brooker, MIH & Kleinig, DA (1990)	Field Guide to Eucalypts Vol.2: South-western & Southern Australia	95.00
Clarke, I & Lee, H (1987)	Name That Flower: the Identification of Flowering Plants	30.00
Corrick, MG & Fuhrer, B (1996)	Wildflowers of Southern Western Australia	40.00
Craig, A (1995)	Native Plants of the Ravensthorpe District	13.00
Erickson, R et al (1986)	Flowers & Plants of Western Australia (out of print)	
	Flora of Australia – individual volumes can be ordered	Varies
French, ME (1997)	The Special Eucalypts, Perth & the South-west	21.50
Gardner, CA (1973)	Wildflowers of Western Australia	20.00
George, AS & George, E	Verticordia – soon to be published	
George, AS (1984)	The Banksia Book	50.00
Harris, JG & Harris, MW (1994)	Plant I.D. Terminology	25.00
Hoffman, N. & Brown, A (1992)	Orchids of South-west Australia	50.00
Hussey, BMJ, et al (1997)	Western Weeds	25.00
Lowrie, A	Carnivorous Plants of Australia Vol 3 – soon to be published	
Marchant, NG et al (1986)	Flora of the Perth Region Vols 1 & 2 (out of print)	
Marshall, J (1995)	Western Australian Wildflowers West Coast Hills	18.00
Mitchell, AA & Wilcox, DG (1988)	Arid Shrubland Plants of Western Australia	45.00
Olde, P & Marriott, N (1994)	The Grevillea Book Vols 1-3	65.00 each
Pieroni, M (1996)	Illustrated Key to Dryandra	5.00
Rippey, E (1995)	Plants of Perth Coast and Islands	50.00
Sharr, FA (1978)	Western Australian Plant Names & Their Meanings: a Glossary	17.00
Urban, A (1990)	Wildflowers & Plants of Inland Australia	20.00
Wildflower Society (1992) (1995) (1997)	Wildflowers of Esperance Vols 1-3, with more to come	9.50 each

Barbara Backhouse also carries the Australian Wildflower Collection Mug and Plate sets, designed by Phillipa Nikulinsky and made locally by an Australian company. A percentage of the sale price goes to the Species Survival Trust and so helps our threatened plant species.

CONGRATULATIONS

All members of CRHVP are doing great things to further knowledge and conservation of our flora. A few in particular deserve special mention.

Meg Officer is a very active member of the Murchison Museum Committee which has established a botanical walk linked to its Regional Herbarium. This Herbarium houses 35 species of *Eremophila* including the rare and endangered Priority 2 *E. mirabilis* known only on Meg's property and at four other localities. Meg has fenced off the population on her property. Her tireless work for the conservation of the Murchison flora was recognised when she became a finalist in the Rural Land Conservation Division of the 1997 John Tonkin Greening Awards.

Jean Hooper is one of our volunteers who in the 1970s started the Zanthorrea Nursery specialising in native species. It is now being run by her son and daughter-in-law Alex and Jackie who in October were awarded Garden Centre of the Year and also Promotion of the Year for their Bilby Club.

Gwynneth Oxnam is a new volunteer who 'starred' in Greening Australia. She opened her Dalkeith garden for all to see the beauty of our native species in the hope that this would encourage others to follow her example.

Rae Papenfus is also a volunteer and on a recent tour to Dirk Hartog Island discovered a new locality of a Priority 2 species – *Anthotroche myoporoides* of the Solanaceae.

Ray Cranfield is a CALM botanist whom many already know because of his involvement in our workshops. Ray has almost completed the description of the new species of *Brachyloma* he found at Kojonup while on our first workshop in 1997!

Thelma Palmer is one of our Volunteers and has a special interest in the genus *Hibbertia*. She was able to show that a field identification as *H. uncinata* was mistaken and was in fact *H. eatoniae*. Though these two species look quite alike in the field, microscopic study shows them to be quite different in structure.

Congratulations to you all!

REGIONAL INFO TOURISM

The system which forms the basis of our Regional Herbaria Project, where you collect duplicate specimens, retain one for your regional herbarium, send the other to CALM Herbarium and then both are assigned the same barcode number, can enable you to develop a sophisticated nature trail.

The main advantage of the system is that you will always have access to the correct and latest name for each species vouchered in the CALM Herbarium in Perth. As well, you can also access other information about each species to add to your own local knowledge.

If you have an area that can stand visitor pressure, such as a walk trail, then you can collect the plants at selected, marked points on the trail. If two specimens are collected, one for your region and the other for the CALM Herbarium in Perth, then both sets of these voucher specimens can be barcoded and identified. Once named then it will be possible to work out flowering months from other Herbarium records and your own observations. You can also access other information about its geographic extent, or rarity and any interesting features to prepare a small, simple, inexpensive guide. Photocopies of individual leaves, sketches or both can be added and you can develop an informative guide for each season of the year. For example, why not have a specific guide for spring and another for summer?

A few Regional Groups have already developed a trail with an explanatory brochure. The Murchison Museum Committee, Meg Officer and her colleagues have an excellent trail. Would you like to have a workshop on how to develop an informative trail to inform tourists and locals about the interesting plants in your area? This could include advice on how to apply for grants to cover costs of any trail development. Let us know and we may be able to either visit you in your area or have a central location for a workshop in your part of WA.

Neville Marchant

THE SPRING COLLECTION

From 1st October till 19th December 1997, we have received more than 20 boxes of vouchers. This is excellent. Of those vouchers processed, we are finding the field notes are being completed more fully, especially with regard to the section on vegetation and the coding of vegetation type which grows in association with the species collected.

Keep up the good work! Remember, make the vouchers LARGE and be very specific when recording the locality of collection. (See article, "Priority Pursuit", K Macey.)

1996-97 VOUCHERS

Over the two year period that the Community Regional Herbaria Volunteer Program has been functioning, more than 2,000 vouchers have been collected, identified and processed and are now incorporated into the Main Collection of the CALM Herbarium.

This is a wonderful achievement by all members of the Program. Congratulations!