Eucryphia

ISSN 1037 – 2032 Number 149 – June 2017

Robertson Environment Protection Society – to promote the protection and enhancement of the Robertson environment.
PO Box 3045, Robertson NSW 2577 www.reps.org.au

PUBLIC MEETING

Friday, 9th June 2017, 7.30pm at the Robertson Community Hall

Guest Speaker
DR ROSEMARY PURDIE

Chasing Plants on Black Mountain, Canberra: Why updating species records is important.

Rosemary is a botanist who cut her plant teeth at Adelaide University. After graduating she spent two years teaching at the Agricultural University in Malaysia before doing her PhD in fire ecology at ANU. She then honed her plant skills in western Queensland doing vegetation surveys with the Queensland Herbarium before returning to Canberra to join the Bureau of Flora and Fauna where she helped to edit four volumes of the Flora of Australia. She subsequently diversified her interests, working at the Australian Heritage Commission for twelve years on natural and cultural heritage, then at the Murray Darling Basin Commission for four years on natural resource management, before supposedly "retiring".

Rosemary preparing herbarium specimens

However she was appointed the ACT's second Commissioner for the Environment for three years before "retiring" properly, which gave her the freedom to become her own boss and a pretty much full time "plant person" once more.

Rosemary collecting specimens

Since her university days, she has travelled extensively in Australia, collecting over 11,000 plant specimens that are lodged in the national and state herbaria, where they help contribute to scientific knowledge about Australian plants.

She has spent the last four years actively researching the flora of Black Mountain.

ALL WELCOME

Join us for supper and a chat after the talk.
A gold coin donation would be appreciated.

The Artificial Feeding of Honey Bees

A presentation made by Dr. John Black at the meeting of REPS on 21st April, 2017 at the Robertson Community Centre, 7:30pm.
Report by David and Judith Mee.

John Black was welcomed back to Robertson by President Peter Glass. Peter also welcomed the many visiting apiarists in the audience. John then introduced his subject by acknowledging Rob Manning, his colleague on their research. John was then working on a project for the Rural Industries R and D Corporation, and Rob was with the West Australian Department of Agriculture and Food. John said that previously he was with the CSIRO, but is now a private consultant. To present this subject John had a detailed set of slides to show, which this report has only summarised in brief.

John began by noting that European honey bees have been in Australia since 1813. They were brought here for honey production and agricultural pollination. While there are around 2000 species of native bees, only ten species are colony forming, these having haploid males with only one sex chromosome, while the females have two.

Nutritional status of the colony affects growth and development of individual bees. When nutrition is poor, a number of effects are apparent:

- The larval growth is slower and the comb is capped one day earlier than usual.
- There is less foraging capacity, due to fewer bees foraging; smaller payload per bee; shorter distance to food source.
- Brood rearing is affected: egg-laying frequency drops, the feeding of the queen reduces, larval survival rate drops.
- Resistance to disease reduces.

In short, the whole colony is negatively affected.

Is artificial feeding, especially a pollen substitute, a solution for commercial apiaries?

John making his presentation.

Australia holds the record for honey produced per colony because of the very large nectar-flow of flowering eucalyptus trees, but their pollen production is poor, being less and of poorer quality than many European flowering plants. Eucalyptus trees evolved to be fertilised by birds and small mammals, with their stamen on long filaments away from the bowl of nectar. Honeybees fly to the nectar without touching many stamens. This can lead to "skinny bee syndrome" and bees should often be taken off eucalyptus and put on other plants to give them enough pollen. Artificial pollen with sugar supplements can help to keep numbers in bee colonies up, especially in winter. Current artificial pollens may be unsatisfactory if they include carbohydrates toxic to bees. They need to include bee-collected pollen. Mineral and vitamin mixtures designed for mammals and birds, but not bees, can contain too much sodium and calcium which is highly toxic to bees.

John went on to discuss the ideal artificial bee pollen substitute and the experiments conducted to find what bees prefer.

A successful artificial pollen must:

- be attractive to foraging bees if provided externally to the colony, preferably looking like yellow flowers, or, if provided internally, then a darker colour is preferred. The smell should be aromatic, obtained by using the correct lipid (oil) in the mix; tactile, allowing particles that bees can pick up easily.
- provide all nutrients essential for rapid growth of the colony
- not include anything toxic to bees, e.g. lactose, starch

Testing for attractiveness took place with a variety of oils, with linseed, coconut and Bundaberg rum proving favourites. Estimating and analysing the food component requirements came up with the following figures: protein 25%, amino acids, minerals 1%, vitamins 0.3%, fibre 15%, mainly consisting of cellulose powder with particle-size less than 0.5mm diameter, and 44% sugar/honey mix. Adding anti-microbial food agents supressed the formation of moulds.

Different sources of protein were trialled. Egg-white proved suitable, but it was expensive. Soy protein was cheaper and proved just as good, but some was found to contain too much sodium, so this had to be tested for. A commercial product called *FeedBee* was also tested. Energy and oxygen requirements were studied for different temperatures. This can be converted to sugar requirements.

Before the research could be completed and a suitable recipe formulated and completely trialled, the project was unfortunately terminated. However, the knowledge of the toxicity to bees of sodium in particular is an important outcome of the research.

In relation to other activities in the field of apiary and honey production, John mentioned some interesting facts:

- The queen mates with at least 18 different males, to ensure genetic diversity in the colony. This ensures sufficient variety of workers with different physical characteristics that enable the range of tasks required in the colony to be carried out; for example, workers are genetically programmed to perform different tasks to regulate brood temperature. For example, when the brood is becoming cold some bees place their chests on the embryo cap and vibrate their wing muscles without flapping their wings to warm the brood. Whereas, when the hive is warming, other bees flap their wings to cause a draft. Further warming sees water-carrying bees blow water in to cause evaporative cooling. The "Flow Hive" invented by Cedar and Stuart Anderson in Northern NSW, has been very successful. They have over 70,000 orders for the product. However, a Chinese company has avoided the patent and is manufacturing and selling a version called *TapComb*.

John finished his presentation at that point and a vigorous question and answer session followed, with important practical input from the many apiarists in the audience.

Lyndy Scott, our tireless secretary, on behalf of REPS, gave John a gift of flowers and wine. A vote of thanks was approved by acclamation.

Tea, cake, and more discussion were enjoyed by all.

Lyndy Scott thanking John

THE ROBERTSON RAINFORESTS: AN HISTORICAL PERSPECTIVE

A noted botanist, teacher and churchman, William Woolls, wrote a paper entitled *Remarks on the Botany of Berrima, and the Mittagong Range, with a glance at "Free Selection"*, which was read before the Parramatta Church Society in 1864 and published in 1867 as part of his book, *A Contribution to The Flora of Australia*. In this he described a visit to the Berrima district in October 1863. Since the first land at Robertson was taken up by settlers in February, 1862, much of the original forest would have been undisturbed then. Woolls showed particular interest in the vegetation of that part of the range near the Wingecarribee Swamp and Mount Kinnoul, where he reported that, because of the basalt rock, "It is

not, therefore, extraordinary to find the vegetation on Tomah and certain parts of the Mittagong agree. Between the head of the Cordeaux River and the road from Jamberoo to Bong Bong there are several large masses of basalt and there, also, tree ferns abound."

Some relevant extracts follow (1):

"The Reverend James Hassall of Berrima, possessing a thorough knowledge of the district in which he resided, takes a pleasure in conducting his friends through the wildest and most intricate parts of the bush so that he may show them the hidden treasures of the country. When Sir William Macarthur was collecting woods, the Rev. J Hassall rendered him essential service in guiding him to the part of the range called "The Sassafras"(2). The same gentleman I am indebted to for a similar favour.

Two remarkable trees of considerable size grow near the Wingecarribee Swamp. The one locally called "Acacia" is *Eucryphia moorei* ..., an ornamental tree, the young shoots and foliage of which are pubescent and the buds very gummy. The leaves are pinnate and the leaflets from nine to eleven… This is one of the most interesting trees of the district and when not in flower resembles some of the larger species of *Acacia.* It was first found near the sources of the Clyde and Shoalhaven Rivers, but it appears to be abundant in the Berrima District. I dare say that when this tree becomes better known, it will be introduced into gardens and pleasure grounds.

The other tree to which I have referred is *Eleocarpus holopetalus* ... a beautiful tree with leaves resembling that of *Quercus ilex* (3), wood close grained and good for joiner's work. This noble tree sometimes attains eighty feet…

In that part of the Mittagong Range, which has recently been made the object of free-selection, the dense parts of the forest closely resemble those of Mount Tomah. As the geological formation seems almost identical and the elevation is considerable, being only 700 feet less than that of Mount Tomah, many of the same shrubs are found in both places. The principal gum-tree of the range is Messmate (4), which in appearance is very similar to stringy bark… This species is of gigantic proportions, being more than 160 feet high and six or seven feet in diameter, and, therefore, the labour of clearing the ground, one would imagine, is somewhat discouraging to settlers. And yet, as I passed along, I heard few complaints on that hand, all hands being cheerfully engaged in felling timber, or burning off, or preparing ground already cleared…

Sassafras (*Doryphora sassafras*) is very common in some parts. This fine tree affords timber for flooring boards and house purposes and the bark is used in decoctions for its medicinal properties.

There is also the tree called "Beech" (*Schizomeria ovata*) (5), which is nearly allied to *Ceratopetalum apetalum* [Coachwood]. Both of these have soft, light, and close-grained wood, not merely useful for cabinet work, but also much in request for coach building. All the trees of this kind in the vicinity of Sydney and Parramatta are very much stunted in their appearance when compared with those of the mountains, for at Mount Tomah and the Mittagong Range the same species become forest trees attaining a height of sixty or eighty feet. It seems almost a pity that in the process of clearing, so many valuable trees of Beech and Lightwood (6) should be sacrificed to the flames, for in a few years, as railroads extend into the interior and means are thus afforded to convey timber to Sydney, such trees will be much sought after.

The same remark, indeed, is applicable to other trees in the same locality, such as the "Beefwood" (*Stenocarpus salignus*) which on the mountains attains a height of eighty feet and produces wood of great beauty likely to be useful for veneers and cabinets; "Lilly Pilly" (*Acmena smithii*)… also a forest tree with wood which, when properly seasoned, may become valuable to carpenters; *Polyosma cunninghamii* or Yerella, a very beautiful small tree with bright glossy foliage and very fragrant flowers and soft-grained wood; the Black Plum or *Diospyros australis*, a tree of the ebony family, yielding a fruit eaten by the aborigines and having a very tough wood; *Alphitonia excela* or Red Ash (7), a tree sometimes nearly 100 feet high with close grained wood; *Synoum glandulosum* or Native Rosewood (8)…; *Guioa semiglauca* (9)… a small tree with hard wood; *Tasmania insipida* or Pepper Tree, a shrub with pretty flowers and pungent seeds.

The Musk Tree, *Olearia argophylla*, is common in some parts of the range. The leaves of this tree are pervaded by a strong musk-like scent.

Hedycaryi or the "Spurious Mulberry" (10) also occurs in the same locality, and, although of small size, it is said to have a soft beautiful wood quite valuable for cabinet work.

Most of the climbers which I noticed were similar to those of Tomah, belonging principally

to the genera of *Aphanopetalum, Pandorea, Marsdenia, Smilax, Cissus, Tylophora, Sarcopetalum* and *Stephania.*

Also the same as Tomah plants were: the orchids, especially the parasitic ones (11); the strong scented shrub, *Prostanthera*; the pretty little *Citriobatus* or "Orange Thorn"; and a diminuitive thorny species of *Canthium* (12) resembling the *Bursaria* or thorn of the low country.

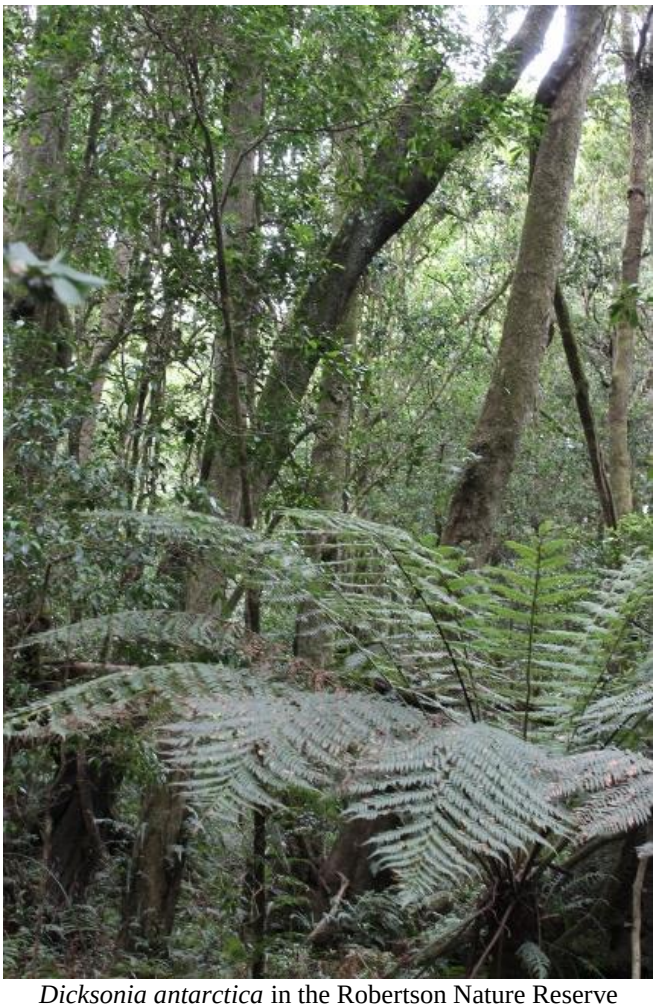
Two of the most remarkable plants of the range are *Fieldia australis*, a climbing root-stemmed plant adhering to the trunks of the tree fern… and *Quintina seiberi*, a curious tree which, although sometimes standing alone in the forest and attaining a height of forty or fifty feet, is frequently seen growing from a tree fern, *Dicksonia antarctica*, each having a separate stem in the ground, but also blended together as, at first sight, appear one. Allan Cunningham was the first to notice this botanical curiosity on Mount Tomah, but subsequent observers are of the opinion that this extraordinary tree, although sometimes apparently growing by itself, is nevertheless always propagated in the first instance from the stem of the tree fern. The same opinion is also expressed respecting *Eucryphia moorei*, of which I have already spoken.

The ferns, mosses and lichens of the range, as far as I was able to observe, seem identical with those at Tomah. The most striking fern is *Dicksonia antarctica*, a tree fern remarkable for its graceful palm-like appearance and attaining, in favourable localities, a height of thirty feet and upwards. There were also two other species of tree fern, *Cyathia australis* and *Cyathia leichardtiana*, similar to those occurring within a few miles of Parramatta.

The climbing species of ferns, *Arthropterus tenella*, *Microsorum diversifolium* and *Pyrosia rupestris* frequently meet the eye of the observer, the most elegant of which being the first as it winds round the trees of the dense forest.

The species of *Asplenium* most abundant are *Asplenium australasicum* or Bird's Nest Fern and *Asplenium flaccidum* with its pendulous fronds. *Blechnum patersonii* occurs frequently as well as *Pterus umbrosa* and *Lastriopsis decomposita*, with some species of *Schizea, Blechnum, Gleichenia, Lindsaea, Davalia* and *Doodia* that are common in the Parramatta area.

The ferns most interesting to me were the small and tender fronds of *Polyphlebium venosum* and *Hymenophyllum nitens* (13). These grow plentifully round the stems of the tree ferns and afford by their bright green fronds a pleasing contrast to the dark coloured trunks on which they grow.



Dicksonia antarctica in the Robertson Nature Reserve

The only species of *Lycopodium* which came under my notice was *Lycopdium uliginosum* and the mosses which appear different from those at Parramatta were *Hookeria pennata*, two species of *Hypnum* (probably *spinerve* and *chlamidifolium*) and *Leskia mollis*.

No doubt many more species occur in the more retired and gloomy parts of the range which I had not the leisure to visit (14), but I scarcely think that the species vary very much from those collected at Tomah. It is probable that a more careful examination of the range may reveal other cryptogamous plants, especially of the ferns and mosses, but I doubt very much whether any really new species remain to be discovered in that part…

In concluding my remarks…I cannot but express the pleasure I felt in visiting a most wild and romantic part of the colony where I had the opportunity of examining in the living state many plants quite new to me and noticing some of the results of "free selection"…

As we have seen from a brief glance at the timber of the district, the settlers are surrounded by dense and beautiful woods which, as the country is opened and facilities are afforded for better means of communication, may become really valuable…"

Those interested in other aspects of the history of the district would find sections of Woolls' paper which make observations on the life of the first settlers worth reading.

There have been authors who have said that we can only surmise what the rainforests of the Robertson plateau were like prior to clearing. This paper is probably the best description available, being by one of the leading botanists of the time, whose visit took place soon after the beginning of the clearing of the district.

Notes:

1. Where necessary currently valid plant names have been substituted for those in the original text. Some minor editorial licence has been exercised.
2. According to James Jervis in *A History of the Berrima District 1798-1973*, the name "Yarrawa" had only been suggested a few months earlier and "Robertson" was to appear later. While it is curious that Woolls did not mention "Yarrawa", other comments leave no doubt that he wrote about the Robertson district.
3. Holm Oak or Holly Oak
4. The tree known as Messmate today is *Eucalyptus obliqua.* The very large trees in the Robertson district are Brown Barrel (*Eucalyptus fastigata*) and this is surely the species referred to by Woolls. Both have stringy bark.
5. Now called "Crabapple". While not uncommon at lower altitudes, this species has not lately been found on the plateau. If found, please contact the editor.
6. Now called "Coachwood".
7. Red Ash is not seen now on the plateau.
8. Now called "Scentless Rosewood". Woolls confused *Synoum glandulosum*, which is unscented and useless for timber, with *Dysoxylum fraserianum*, another "Rosewood" from the north coast.
9. This species is not now seen on the plateau.
10. This would have been *Hedycaria angustifolium*, now known as Native Mulberry.
11. The tree orchids referred to are not parasitic but epiphytic, living upon but not harming their hosts.
12. This is probably what is now known as *Coprosma quadrifida.*
13. Woolls used a name for this filmy fern that is currently not in use and which does not appear in synonym lists. Filmy ferns are locally common on tree ferns where humidity is high.
14. Several other species have since been found but his survey seems to have been remarkably thorough. Whether other species later found in the district were present at the time or have appeared since is a matter of conjecture. The large-scale clearing of the forest may have made conditions favourable to invading species which could not establish previously. Clearing may have altered conditions necessary for regeneration of previously successful ones. It is interesting that two pioneer species that are now very common, *Pittosporum undulatum* and *Acacia melanoxylon* (Blackwood), were not mentioned by Woolls. It has been my observation that Blackwood does not germinate under the rainforest canopy so it may have become as ubiquitous as it is only in regrowth, where it has been observed to die sooner than the climax species such as Sassafras, etc. Similarly, Brown Barrel is not present in mature rainforest.

Allan Stiles

This article, with some revisions, is a reprint of the one published in *Eucryphia No.1* in December 1990. It is made available again for the many readers who would not have read it then.

POETRY CORNER edited by Peter Glass

You will notice that our REPS secretary Lyndy has contributed two great poems this month. Thank you Lyndy. Perhaps some others have a poem of their own or other suggestions for including in the future?

Africa and Australia

In Africa I am in awe
Of the pageant of animals
Privileged, humbled, in a dream
Bewildered
Something subtle is so different
To what I know To Australia

Something about the look, mix, movement
Of the animals
Being real, appearing right
Species upon species upon species
That is it!
In Australia something that looks
Like a zebra, oryx, wildebeest
Is alone with its kind

A paddock of cattle
Hereford, steers, yearling, poll, eartagged, identical
Contained by wire
Next paddock, sheep
Merino, ewes, dry, six tooth, eartagged, identical
Contained by wire

In Africa there are dams, sires, offspring of all ages
Extended families in each of the
Species upon species, moving together
No fences, troughs, yards
In Africa there are no stamps of ownership
And all males have testicles

In common they are prey
In Africa they know it
In Australia also but without the edge
Unfair comparison wild to domesticated
Although so similar in appearance
Wildlife in Australia is not

They too have family groups but few visible species
Something else though is so different
Something about being mud fat, glossy, fit
That is it!
In Australia sick wildlife live long enough to be seen
In Africa they vanish promptly

Enter the predator
The stark and perfect difference
Only it can afford to look unhealthy
And only if at the top of the chain

In Australia livestock can limp, scour, cough, separate
And get away with it
Enter the predator
To heal, to cull, to make a living
At the top of the chain

Lyndy Scott

Dogs

I think about my dog an awful lot
Sometimes just the one I've got
Sometimes other friends
Each recalled uniquely

I love my dogs deeply
Each makes me smile, melt, care
Welcomed into my life with wonder
Farewelled with thanks and my life left bare

I love their shape, eyes, slobby chops
Heartbeat, dog breath, frenzied wagging
Or the thump… thump… of contentment
I love their outrageous joy and uninhibited indulgences
Their downright dogginess

I live for their unfailing love for me, whatever

I am a good owner and a dog's best friend
I believe I understand them

Dogs have known me forever

Lyndy Scott

If you have a poem we would welcome your contribution. Send to Peter Glass, 65 Vandenburg Road, Robertson 2577

FURTHER REPS MEETINGS

Friday 11th August

Friday 13th October

Friday 10th November
AGM and presentation.

BUDAWANGIA
Edited by Dr Kevin Mills

Budawangia is an e-newsletter for all those interested in the native plants of the South Coast.

Dr Kevin Mills lives in Jamberoo and is a botanist and researcher. He is an expert on rainforests and the trees of the South Coast, having done considerable botanical survey work in the area over several decades. He is author of several books including *Rainforests of the Illawarra District*, co-authored with his partner Jacqueline Jakeman. REPS members may remember him as one of the experts we asked to review and referee our Yarrawa Brush book, before we printed it, back in 1993.

The aims of his monthly newsletter are "to connect those interested in the native flora of the NSW South Coast, to share up to date information on the flora of the region and to broaden the appreciation of the region's native plants."

The e-newsletter is magnificently illustrated with pictures and diagrams. A great read.

Kevin also provides a free plant identification service if you send a photograph, scan or specimen of the plant to him. "(no roses or camellias please)"

The name *Budawangia* celebrates the memory of the name given to an endemic monotypic genus of the Budawang Range. The name was discarded in a review of *Epacris* in 2015. Taxonomists ensure that names don't always stick.

Contact:
Kevin Mills, Jamberoo. Tel. 02 4236 0620
kevinmillskma@gmail.com

CAALANG CREEK WORKING BEES

Saturday 24th June is the next working bee.

Please come and join us for as long as you are able. Don't forget water, hat and gloves. We have tools available, but bring your own if you can. Caalang Creek volunteers meet at the footbridge in Hampden Park.
Queries to Steve Douglas 4271 4957 or
Leon Hall 4888 2222.

REPS MEMBERSHIP

Membership is from November to November. We are having a great year in 2017. If you are not yet a member, please consider becoming one.
Helen Tranter phone 4885 1394

CONTACT REPS

Those who are interested in supporting our aims are welcome to join REPS. Our aim is to promote the preservation and enhancement of the Robertson environment. We welcome contact with individuals and other community groups. For further information and subscriptions please contact:
President – Peter Glass on 4885 1921,
Vice-President – David Mee on 4885 1483
or PO Box 3045, Robertson 2577

This newsletter is named for the beautiful local tree, *Eucryphia moorei*, known as Pinkwood or Plumwood. The REPS logo includes a drawing of leaves of this tree.

Articles for *Eucryphia* may be sent to the editors: Allan Stiles, Sheila McInnes and Lynn Stevenson.
eucryphia@reps.org.au

VISIT THE REPS WEBSITE
www.reps.org.au