

RAINFOREST STUDY GROUP



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Group Leader
DAVID JENKINSON
18 SKENES AVE,
EASTWOOD 2122

"Two hectares of Rainforest in far North Qld. can contain over 150 different species, more than the entire tree flora of Europe or North America!"

GROUP ADMINISTRATION

Ron Twaddle is officially "Area Coordinator - Brisbane" in recognition of his organising the regular activities of the local membership. It would be good to have other coordinators, (I suggest Victoria, NSW North Coast, Sydney plus South Coast, and Qld Coastal) who would organise regular activities and increase members' involvement in the group. It would be of great benefit all round and enable me to collate and publicise regional activities in newsletters. Can YOU help? You will quickly realise your involvement will be both interesting and rewarding.

You will recollect that Esther Taylor has offered to establish a "register" of plants grown by members. Some of the important functions are listing sources of seed and cutting material, to allow members direct contact to discuss problems, growing conditions, various other ideas. Please send her your list of plants, both in cultivation and otherwise readily accessible to you, for adding to existing records. It doesn't matter whether you grow or are familiar with locations anywhere in Australia, or if you have only a few species, send details to Esther. Address is 74 Francis St., Raymond Hill, Ipswich, Qld. 4305. We also need an appropriate title for the position, suggestions welcomed. ("Plant Registrar" has been ruled out.)

NEW MEMBERS

We welcome the following people to our ranks, and look forward to meeting you soon.

Colin Andersen 109 Govenors Dr Lapstone 2773
Patrick Bennett 55 Sydney St Brassall 4305
Judith Brass 15 Patricia St Karalee 4306
Frances Czwalinna 5 Lipsia Pl Carlingford 2118
Faye Duncan 155 Fowler Rd Illawong 2234
Colin Ellis 49 Boronia St Wentworthville 2145
Edith Faulks RMB 878 Croziers Rd Berry 2535
Garry Germon PO Box 181 Gloucester 2422
Phil Lane 17 Ernest St Balgowlah 2093

Debby Little 17 Tennyson St Dulwich Hill 2203
Danny Olbrich 90 Benelong Rd Cremorne 2090
(Rev) Aub Podlich 86 Raceview St Raceview 4305
Claire Shackel 19 Arafura St Upper Mt. Gravatt 4122
Pat Shanahan 2 Poincianna Dr Browns Plains 4118
Nerida Silke 20 Veronica Dr Mudgeeraba 4213
Lindsay Snell 50 Whitfield Pde South Hurstville 2221
Northern Rivers R'forest Nursery Burringbar 2483

NEXT BRISBANE MEETING - SATURDAY 26TH OCTOBER

Excursion to Wards Scrub led by Jack Mitchell. Meet at 10 a.m. at the park opposite Samford Hall in Samford village UBD ref. map 10 N/1. Contact Ron Twaddle 379 8105 for further information.

FUTURE SYDNEY MEETINGS

Could I have some nominations from local members to conduct the group through nearby places worth visiting during 1992? We propose 3 of these events, on the 3rd Sundays in February, June and October.

FOR THE DIARY - TROPICAL & SUBTROPICAL RAINFOREST SCHOOL NEXT YEAR.

Queensland's Mackay SGAP Branch are proposing to conduct a Tropical & Subtropical Rainforest School in September, 1992. The second week of the school holidays—from Saturday 26th to Wednesday 30th September - has been tentatively booked at the Queensland Recreation Camp at Seaforth for this proposed school. Anyone interested should note this in their diary for 1992. Branch secretary is Mrs. Irene Champion, 20 Swift St., Slade Point 4740 (phone 079 0551745).

WANTED DESPERATELY - POLYSCIAS MURRAYII

Seeds or cuttings. I first saw this beautiful palm-like tree in the rainforest gullies of far eastern Gippsland (the Howe Range is its most southerly distribution). I have searched in vain for seed and have had no luck with any Rainforest Nurseries. This is a pity as it is a wonderful, quick-growing rainforest colonizer, that I am sure would achieve wide acceptance amongst the public were it readily available. If any members know where I can get seeds, cuttings or plants I would be most grateful. (I am growing the superb fine-leaf form of *Polyscias sambucifolius* in my rainforest and find that it is in constant demand in the nursery). Neil Marriott, Box 107, Stawell, Vic., 3380.

NATIVE FORESTS - THE TRUTH ADMITTED AT LAST

Despite repeated denials from State Government forestry organisations that overcutting was occurring, it was always "we practise a sustained yield harvesting policy", yet another body, The Resource Assessment Commission stated unequivocally in July, that overcutting has gone on for very many years. Previous statements to this effect were made by the then Premier of NSW, N. Wran, commenting on what he inherited on his governments coming into office in 1976, "Timber harvesting far exceeded the rate of regrowth and the industry's appetite required that more and more native forests be consumed". Evidence produced at a court hearing into the recent NSW Washpool E.I.S. was that sustained yield has been ignored and overcutting was consistently encouraged. Even the Forestry Commission itself admitted to a R.A.C. enquiry in mid 1990 that overcutting has been allowed. It seems many people have been telling a lot of porkies. Or else they have been particularly incompetent. Or corrupt?

MEMBERS' COMMENTS

Sweden's Thomas Carlsson continues regular contact listing his successes in growing from seed even though their early summer was pretty cold. Actually, he has germinated species that I've sown in the supposed temperate Sydney without success! Well done Thomas, you will certainly have stock that will do very well in the coming "Greenhouse". A new glasshouse of 25 sq.m. almost completed will allow him to maintain many more plants. He is very keen to try as many common or unusual species available to him.

Esther Taylor mentioned that the Ipswich Group had two interesting outings, firstly to Jim Collins' garden with some trees now 30' high after 3 years! Jim said his plants appreciated a good start after the rocky, clay soil was ripped, then amply mulched and plenty of water from a sprinkler system. The following month Jim conducted an outing to a local school garden called Googooorewon where plants including many rainforest species used by aborigines and early settlers for food and medicine, are grown as part of a teaching programme. Areas to encourage birds, or for attractive flowers and fruits are included.

The tour notes by Bill and Alison (N/L 12) were a great help to Alex and Peggy Lyons who also travelled north in July. They spent two weeks based at Cairns and managed to visit many of the interesting and beautiful places in the area.

Junior membership is growing in leaps and bounds. Peter and Dianne Jurd added a daughter to our ranks a few months ago. Congratulations to you both.

Some suggestions for the traveller in northern NSW from Stephanie Horton. Places that are worth visiting are New England National Park - Point Lookout area encompasses beautiful Cool Temperate rainforest; Mount Hyland Nature Reserve; Long Point - dry rainforest on the edge of gorges - turn off at Hillgrove west of Wollomombi; and of course Dorrigo National Park - Warm Temperate rainforest at Never Never picnic area and sub tropical rainforest along the Wonga Walk.

Christine Smith has changed her address as she is now Chief Propagating Person for the Mt. Tomah section of the Royal Botanic Gardens. "This is a whole new area to me - lots of exotics. We do, however, grow many cold climate rainforest plants - so if a member has a special request I could probably get permission to take some cuttings". (Congratulations Chris.)

Mimi Godfrey has donated a number of publications for our Library, including the classic "The Trees of New South Wales" by R.H. Anderson, and other more specialised booklets and research notes. Thank you for these, Mimi.

S.E. QLD JUNE MEETING REPORT

Three locations were visited, we met at the Rafting Ground Reserve near the junction of Moggill Creek and the Brisbane River at Kenmore. Last century this site was used to prepare rafts of logs for floating down to sawmills in Brisbane. It is a pity to now see these areas in a "mined-out" condition and no longer producing timber. Anyway this public reserve still has some fine remnant rainforest trees including *Castanospermum australe*, *Mallotus philippensis* and *Toechima tenax*, which was in flower. Recently a replanting project has got under way by local residents assisted by the City Council's Environmental Officers. Sensibly, only local species are being used so the project has educational as well as environmental value.

Lunch was enjoyed in the relaxing atmosphere of Graham Nosworthy's extensive garden at Pullenvale. We could look forward for a return visit to look at the many species that Graham grows. We then moved westward a few kilometres to the N.E. sector of Moggill State Forest, with Lloyd Bird describing the plants. Over the years Lloyd has made many visits to this area and listed most of the vegetation for posterity. The Forestry section of the Queensland Department of Primary Industries has asked if we could provide them with information about areas needing special conservation attention. Moggill State Forest like so many other areas in south east Queensland is under threat of weeds and at the time of our visit was showing stress due to the current drought. Despite these disappointments there was still a lot to enjoy including flowering *Baloghia lucida*. Some other plants noted were *Jagera pseudorhus*, *Rapanea variabilis*, *Alyxia ruscifolia* (with very large leaves), *Mallotus claoxyloides*, *Dianella caerulea*, *Planchonella myrsinoides*, *Citriobatus pauciflorus* and *Macrozamia lucida*. These few species chosen at random indicate that this forest is of the "dry" rainforest type. (from Barry Jahnke)

RECENT SYDNEY MEETINGS

We thank Betty and Eric Rymer for their hospitality to the 11 members of the Group who attended the May meeting at their Kenthurst property. July also had 11 members at the home of the Leader, who apologises profusely for forgetting to present the McPherson Range Rainforest video as had been planned.

THE RAMBLE - REPORT

Due to a number of factors, the trip was somewhat reduced to 11 days and as far as Lismore only. Five group members and 2 "birdoes" made up the party and the following locations were looked at. Wingham Brush, Swans Crossing (near Kendall) Sugar Creek Forest Reserve (Buladelah), Boorgana Nature Reserve (Comboyne), Bellingen Island and Bundagen Forest Reserve, Maclean Nature Reserve, Iluka Nature Reserve, Terania Creek, Victoria Park and Booyong Nature Reserves, Rocky Creek Dam, Big Scrub Forest Reserve, Rummery Park, Booti Booti, Alex Lyon's place, each one different from the others. We were fortunate in having Ross MacLeay, Jan Parkin, Ralph Woodford and Far North Coast Group members conduct us through particular areas. North Coast also arranged an evening BBQ and a spotlight walk during our visit. It was a good trip, and trouble free.

AN ENDANGERED SPECIES - TRIUNIA ROBUSTA

Gordon and Estelle Geering, SGAP and Cons. Group members advise "A recent issue of Wilderness News, contained an item about *Triunia robusta* (native honeysuckle) a small tree growing to 4m with very fragrant flowers - related to macadamia and wheel of fire trees. Has significant horticultural and medicinal properties. Declared extinct in 1989 after not being seen for 100 years. Now two finds have been made at Nambour. The first find was a small collection of plants, while the second had twice as many plants in a very healthy condition. It had survived in a steep rocky gully on private land - in other words, inaccessible. BUT a company wants to quarry the area for hard rock used in concrete and roads. Maroochy Shire Council refused permission. The company was taking the Council to court. The case was due to be heard on July 15. The local people were backing the council 'becoming respondents by election against the company which is represented by a QC.' The item concluded 'letters in support of the Maroochy Shire Council and local community's attempts to protect this extremely rare plant will be very effective. Please send letters to Dept of Environment and Heritage Parliament House, Brisbane Q 4000.'"

PROPAGATION PAGE

MORE ON NAUCLEA ORIENTALIS. "I bought one in April 1990 in a 140 mm pot. It looked really good so I planted it at once, and I bought 2 more. The first plant then went rapidly into a decline, coming into winter, and eventually died. The other 2 remained in pots becoming more miz every day until one of those also died down to ground level and I threw it out. I was about to discard the third when I noted it was looking a bit more cheerful so kept it in the pot through the winter and planted it out in Jan. 1991. It has grown reasonably well to about 60 cm. Nan Nicholson advised giving it a plastic bag cover (top cut out but I think I may leave top on and just give it small breathing hole space). Nan also commented that not only frost, as such, is one of winter's lethal weapons but also long continuous periods of intense cold". (Inez Armitage, Kempsey).

"Mine haven't flowered or fruited yet, so I've no experience growing from seed, but they are really easy to grow from cuttings. Even here, they get very unhappy in winter and drop leaves, but once they get to 2 1/2 - 3 metres there's no problem. I must add though, we haven't had a frost in the last 4 winters". (Alex Lyons, Valla).

OMALANTHUS POPULIFOLIUS. "Referred to by many people as 'Oh that weed'. It is one of my favourites. Certainly grows like a weed in speed but I see no other resemblance. V. easy and quick from seed (am told cuttings also easy but never tried as seed is so quick and reliable.) Makes a very pleasant contrast to all the much heavier types of foliage, appears to be very happy in many soil types, grows well in either sun or shade, does not require large amounts of water, can be used as a starter in rainforest plantings - that's my idea of the perfect plant!" (Inez Armitage, Kempsey).

SHIZOMERIA OVATA ... is still proving difficult - Mal apologises but mislabelled his propagation tray so the couple he thought had germinated were not Crabapples. Everyone back to the drawing board!

SOME EASY CUTTINGS TO TRY. "Austromyrtus dulcis layers with ease. Just remove the leaves for 6 - 8 inches, wound the area by removing some bark and bury it in the ground, staking it down well. In about 2 months a healthy clump of roots should have formed. Another success was Hoya australis. I tried both a stem cutting and a leaf cutting. Both worked, however the stem cutting had formed a healthy root system after only 4 weeks whereas the leaf took twice as long. Of course Grevillea robusta cuttings will grow roots if you do nothing but spit on the end of them. I have never had one fail. A Pullea stutzeri established very quickly from a December trial. Yet since then at least 5 further attempts have been unsuccessful, efforts at marcotting it have also been futile. However I have tried Endiandra compressa, E. pubens, Opisthiolepis heterophylla and Acronychia laevis without success." (Ron Twaddle, Brisbane).

SYZYGIUM PANICULATUM. "I have one 10 years, don't know when it's first flowering was but it must have been pretty inconspicuous for several years, just a few scattered flowers and even less fruit. Last year I collected and distributed to friends and nurseries 3,000 fruits in lots of 500 and there would have been an equal number left on the ground. I sowed about 20 seeds myself, did not keep a record but germination was quick and very easy to handle. As you say they are polyembryonic. Asked Alex Floyd whether to separate when potting on and he said doesn't matter as almost invariably one will outstrip all others which will gradually die away. Alex also confirmed very rare in the wild these days but very widely cultivated. I endorse your comments re sooty mould and its ability to rid itself of it without any apparent permanent disfigurement." (Inez Armitage, Kempsey).

PROPAGATION ETHICS. (from Hugh Nicholson). "I am interested in this question as we grow almost all our plants in the nursery from seed gathered from roadsides, farmers paddocks and street trees in suburbia. Apart from seedlings producing a better looking plant in a pot, I feel it is important to grow from seed to keep as wide a genetic base as possible in our still dwindling rainforest plants. If we restrict ourselves to growing from cuttings from a 'superior' stock plant, we may find that our criteria for selection is not necessarily in the best interests of the planet.

However, I do agree that raiding remnant forests for seed is not good and can only be tolerated where (with the agreement of NPWS or similar), a rare tree is thus propagated and planted more widely. Plants grown from such sources should not be sold, but dispersed among grower/enthusiasts who will tend and appreciate this future stock plant. The collection of seedlings from the wild should not be contemplated unless for use in re-establishing disturbed areas using local material to keep the forest genetically 'pure'."

Ron Twaddle comments, "On the whole I thought the cutting information useful, however we must be careful of the overuse of propagation from cuttings, and particularly such methods as tissue culture etc. It is important to regularly add seed grown plants into cultivation, constantly adding to the gene pool. Cutting-grown plants alone would not cause many problems, I think, but tissue culture and the possibility of such mass production of genetically identical plants does worry me somewhat. As the forests recede, or even if we keep all of the little that remains, deliberately planted trees and forests become more and more important and if we so limit the gene pool by our artificial methods of propagation, what will result?"

REVEGATION STRATEGIES - SOME IMPORTANT CONSIDERATIONS. Use species capable of self sustaining regeneration. Give priority to endemic species. Propagate from local seed or cuttings sources, as these have evolved to best suit the immediate habitat and associated conditions. They will also provide maximum benefits to the local environment and its ecology.

Unfortunately, there are too many examples of completely altered landscapes eg. salinity, changes in soil structure (erosion, humus content, compaction by hooved animals), moisture levels (changed drainage or rainfall patterns), insect imbalance, total loss of original vegetation, etc. These sites may well require the use of natives from other areas to hasten environmental improvement. Requirements of these "introduced" species include - locally proven, easy to establish, fast growing, appropriate life span, must be non-invasive, provide suitable habitat for remaining fauna and encourage reintroduction of locally extinct species from surviving populations further afield.

PROBLEM CORNER. Alex Lyons is having troubles with ants in his Valla property's plantings. He has no argument with their normal living arrangements, but these particular ants sometimes excavate their nests and create volcano shaped hillocks around the entrances. The problem is when they have a nest adjoining a small plant, the soil level can be built up to such an extent that it will kill the plant. Alex wonders if any of us know of an effective, inexpensive and not too environmentally unfriendly method that can either eradicate or force them to migrate to less sensitive areas.

TRY THIS ALEX - GARLIC PEST CONTROL. Mix 3 oz chopped garlic with 2 teaspoons of lighting Kero and leave for 48 hrs. Then add 1 pint water mixed with 1/4 oz oil based soap as spreader. Then store in plastic (not metal) container. Normal use is a 1% solution, 1 pt to 100 parts water. Stronger if it is not controlling the pest as it should eg. 73% solution kills snails, 98% the codlin moth, 1% for mosquitoes. (An old recipe that Esther Taylor thinks may be useful to members in many garden situations).

ACACIAS FOR COVER IN RAINFOREST ESTABLISHMENT

Inez Armitage maintains the discussion with these comments. "I have about an acre of 9 year old rainforest. Most of the initial shade was provided by a scattered stand of *A. floribunda*, already in place and varying in age, I would guess, from about 15 years and under. Some of these are now dying, and whilst no complete trees have fallen, large branches up to 30 cm in diameter and 12 metres in length have come down as well as many smaller ones.

I am continually amazed at the relatively little damage they do, the reason being that their fall is interrupted at intervals as they strike other trees on the way down, and so far nothing has been irreparably damaged. Quite often these fallen branches create excellent niches for ferns, climbers, creepers, aspleniums, elkhorns etc., especially at the junction of the branch with the main trunk and other branch connections. There's always salvage and repair work to be done, of course but not long ago one branch deposited at my feet an enormous spray of flowers from a *Milletia megasperma*, one seed planted 9 years ago and the plant never seen in the meantime.

I have not any evidence that growth of other trees has been hampered, but that would be pretty difficult to assess unless one is very knowledgeable about the habits of species one has planted, which unfortunately I am not."

And from Hugh Nicholson, "On the wattle debate:- I have seen several plantings fail in northern NSW because the prevailing orthodoxy at the time insisted wattles should be grown as a cover crop for rainforest species. Now that we have recognised how hardy are many, if not most, of the rainforest trees, it is obvious that our initial plantings can be very varied. Plantings should be at close spacing and mixed between pioneer and later stage trees. Use some wattles if you want but be aware of the need to knock them back before they inhibit your other plantings either by root competition or shading. Wattles don't need to be cut down, they can be ringbarked and left to gradually disintegrate."

RAINFOREST ESTABLISHMENT AT VALLA, N.S.W. MID NORTH COAST FROM ALEX LYONS

Alex has a couple of acres with around 900 NSW and Qld plants of approximately 200 different species, some of which have enjoyed phenomenal growth having reached 30' high in under 4 years. He comments "Its been so dry on the north coast this year, we may have lost a season's growth - very disappointing! Three year average for Jan - April is 1230 mms - this year - 363 mms! As our dam is too low to use sprinklers we can only water by hand held hose and only those plants that really need it for survival.

PLANTING AND MAINTENANCE. I mix a small amount of old manure and slow release fertiliser in the planting hole - I'm happy with the results of this method. I always mulch with whatever is available - at the moment I'm using pine needles. I try to keep weeds and grass away from plants, but a shortage of mulch lets me down. Once the plants are established, I fertilise regularly during the growing season with Multi-gro. I've had excellent results with this.

RAINFOREST ESTABLISHMENT. I'm afraid I don't agree with the experts on this subject. There are - in my limited experience - very few rainforest trees and shrubs that will not thrive in full sun from an early age 15 - 30 cm. So planting pioneer species to shelter more desirable species is literally a waste of time and slows growth of the latter.

Postscript - Well, after the big dry, came the big wet - 15 inches in 6 days! Plus very strong winds in early June."

NURSERY OF THE MONTH - WHITE GUMS NURSERY - STAWELL, VICTORIA

Ten years ago my wife and I purchased 40 acres of heavily overgrazed farmland at Deep Lead, an old gold mining town on the edge of the spectacular Grampians Ranges in Western Victoria. This area has a strongly Mediterranean type climate, long hot dry summers, and cool wet winters. This climate, combined with the well-drained acid gravelly-loam soil was most conducive to the growing of a large range of W.A. dryland plant species; in particular my favourites, the Grevilleas. These, combined with Hakeas, Eucalypts, Acacias, Correas, Eremophilas, Verticordias, Lechenaultias and a multitude of other genera were planted out in large raised garden beds with a great deal of success. Fortunately we are on a rise which protects us from bad frosts. Although we usually experience 10 - 20 frosts per year, these are usually of temperatures to -1^o or -2^oC. Early in our plantings I trialled a number of rainforest species as an overstorey for a fernery. The results were most promising. Several trips north to the beautiful rainforests of northern NSW and Qld confirmed my love for the Rainforest flora.

Five years ago I began developing a large Rainforest Garden. After deep ripping the area, and digging out a creek and several pools, it was heavily planted around the boundaries with dense shrubs and trees. In the following years whilst the boundary screen was growing, tons of leaf clippings, branches, grass clippings and alternate layers of topsoil were added to the site.

As this decomposed, large overstorey shrubs such as Swamp Mahogany (*E. robusta*), Sydney Blue Gum (*E. saligna*) and Mountain Ash (*E. regnans*) were planted through the garden and grew rapidly. We were soon adding various Lilly Pillies (*Acmena smithii*, *Syzygium australe*, *S. leuhmannii*), *Lophostemon confertus*, *Tristaniopsis laurina*, *Waterhousia floribunda*, *Omalanthus populifolius* as well as the Rainforest Grevilleas, *G. baileyana*, *G. helmsai*, *G. hilliana* and *G. robusta*.

After a few years, the trees were providing overhead protection from the sun in summer and the frost in winter. Drippers were placed on each plant but as ferns and more sensitive plants were introduced, an automatic sprinkling system was installed to increase humidity and keep the soil surface moist during summer. As our only water for the nursery and gardens is a dam, we are conscious of the need to conserve water in summer, but find the rainforest area does not consume large quantities.

We are now growing a wide range of rainforest plants ranging from cool-temperate to tropical species with a considerable degree of success and are extending the area. Visitors to our garden over summer marvel at the beautiful atmosphere and we find it a great relief to have a cool retreat (as does our local bird population).

We stock a moderate range of rainforest plants in the nursery, most of which we grow from seed or cuttings from our rainforest area. Many of these are popular in Victoria as indoor plants. (Check "Australian Plants" for Nursery details). Neil Marriott.

A PLACE WORTH A VISIT - POINTS RESERVE ARBORETUM, COLERAIN VIC.

This is a spectacular collection of Australian native plants, with the largest collection in Australia of Eucalypts, as well as thousands of other plants of many genera. Due to elevation and aspect the area is free from frosts, with many north Australian plants thriving. The Shadehouse Rainforest area being officially opened on 3rd November should considerably extend the range of plant species and genera being grown in the Arboretum, which is very popular with the general public. Members visiting S.W. Vic. are strongly advised to inspect the Reserve to see plants growing together from all over Australia, in a wonderful display. The addition of the Rainforest Shadehouse should add to the popularity of rainforest plants in this part of our country.

GARDEN OF THE MONTH - KARALEE - S.E. QLD.

New member, Judith Brass, has sent the following details. "I have a 60 perch block near Ipswich. It slopes about 1 m. in 10 to the south and a little less steeply to the west, soil is a grey sandy loam with just enough clay to make it set like concrete.

The whole of the rainforest area was mulched with newspaper, followed by whole saplings (mainly bloodwoods and wattles) piled up to about 1 m. These were available in great quantities as everyone else was clearing their blocks while I was beginning to plant. When these began to dry out and crumble a 30 cm layer of long grass clippings (raked from parks, vacant blocks etc) was added. After the first year only thin layers of grass have been added to maintain a mulch depth of about 30-40 cm.

Initial growth of most plants has been slow, most take about 1 year to establish in the thin (60 cm max) soil over sandstone. Minimal amounts of blood and bone fertilizer has been used. A drip watering system has been installed. Several non rainforest species have been planted where the sandstone is very close to the surface. All plants were under 1 m. when planted, most between 15 and 30 cm. (Larger plants tend to blow over in the shallow soil.) No frosts occur but cold winds have caused some damage.

Other failures included *Syzygium willsonii*, *Cryptocarya bidwillii*, *Grevillea glauca*, mostly lost to drought or too much rain before they became established.

Rainforest Trees and Shrubs in My Garden

	Comments.		Comments.
<i>Wilkea macrophylla</i>	Slow grower	<i>Ficus opposita</i>	birds dropped seed
<i>Flindersia australis</i> (2)	single stem, no branches	<i>Glochidion ferdinandi</i>	completely defoliated Dec. (1990 but recovered.
<i>Acmena smithii</i>	bushy to ground	<i>Graptophyllum spinigerum</i>	straggly, not doing well
<i>Gmelina leichhardtii</i>	slow grower	<i>Guioa semiglauc</i>	bushy
<i>Elaeocarpus reticulatus</i>	has flowered	<i>Harpulia pendula</i>	bushy, to 5 m wide
<i>Euodia elleryana</i>	sparsely branched	<i>Hymenosporum flavum</i>	lost 1 in wet
<i>Lea indica</i>	seed took over 12 months to germinate	<i>Macadamia</i> (2)	very fast
<i>Pilidostigma glabrum</i>	very bushy, has sooty (mould)	<i>Melia azedarach</i>	nursery rejects, lost 1
<i>Alectryon tomentosus</i>	grasshoppers love it	<i>Murraya ovatifolia</i> (2)	fairly fast
<i>Rhodamia rubescens</i>	suffers in cold winds	<i>Olea paniculata</i>	flowers, no fruit
<i>Pleiogynum timorense</i>	slow, lost one	<i>Petalostigma pubescens</i>	flowers and seed
<i>Davidsonia pruriens</i>		<i>Pittosporum rhombifolium</i>	flowers, no seed yet
<i>Sophora tomentosa</i>		<i>Pittosporum venulosum</i>	germinated within 4 weeks, (slow grower)
<i>Barklya syringifolia</i>	slow, lost one	<i>Planchonella australis</i>	fast, spread of nearly 1 m
<i>Syzygium australe</i>	has flowered	<i>Podocarpus elatus</i>	very fast
<i>Syzygium oleosum</i>	fast growing, lost one	<i>Waterhousia floribunda</i>	flowered and seeded
<i>Syzygium francisii</i>	very bushy	<i>Aleurites moluccana</i>	
<i>Sterculia quadrifida</i> (2)	loses most leaves in (winter)	<i>Buckinghamia celsissima</i>	
<i>Austromyrtus bidwillii</i>	hares ate it off twice	<i>Cardwellia sublimis</i>	very fast
<i>Stenocarpus sinuatus</i>	very fast	<i>Toona australis</i>	looks sick, lost 1 in 1988
<i>Brachychiton acerifolius</i>	growing on sandstone	<i>Ceratopetalum gummifera</i>	growing steadily
<i>Backhousia citriodora</i>	producing fruit cont.	<i>Microcitrus australasica</i>	struggling
<i>Breynia oblongifolia</i>	forming small cones	<i>Cupaniopsis tomentella</i>	
<i>Callitris macleayana</i>	seed planted insitu	<i>Darlingia darlingiana</i>	flowered, has seed
<i>Cassia brewsteri</i>	unbranched	<i>Lagerstreemia archeriana</i>	doesn't like the heat
<i>Castanospermum australe</i>		<i>Mackinlaya macrosciadia</i>	doing well, lost 1 earlier
<i>Cordyline rubra</i>		<i>Metrosideros queenslandica</i>	slow to start, doing well
<i>Cordyline stricta</i>		<i>Nauclera orientalis</i>	doing well (now
<i>Clerodendrum tomentosum</i>	bushy	<i>Randi fitzlanii</i>	on rocky site (2)
<i>Diploglottis cunninghamii</i>		<i>Xanthostemon chrysanthus</i>	struggling
<i>Dissiliaria baloghoides</i>	fast growing bushy	<i>Musgravea heterophylla</i>	very fast
<i>Dysoxylum fraserianum</i>	very sick, has not (grown)	<i>Eucalyptus torelliana</i>	very fast
<i>Eupomatia laurina</i>	bushy, flowers no fruit	<i>Grevillea robusta</i> (3)	doing well
<i>Ervatamia angustisepala</i>	1 flower, 1 fruit	<i>Grevillea pinnata</i>	germinates within 4 wks
<i>Eugenia reinwardtiana</i>	germinates readily very	<i>Archontophoenix cunninghamia</i>	over 1/2 seeds up within 6 wks
<i>Pothos longipes</i>	difficult to transplant	<i>Archontophoenix alexandra</i>	slow, don't like cold'
<i>Pandorea jasminoides</i>	flowering well, sets	<i>Caryota rumphiana</i>	lost 4, 1 growing well, 1
<i>Freycinetia scandens</i>	doing well (seed	<i>Linospadix monostachya</i>	don't like wind (sick
<i>Cissus antarctica</i>	flowers but no fruit yet	<i>Carpentaria acuminata</i>	doing well
<i>Hoya australis</i>	flowered	<i>Livistonia australis</i>	growing slowly, lost 1
<i>Eustrephus latifolia</i>	now self-seeding	<i>Ptychosperma elegans</i>	doing well
<i>Faradaya splendida</i>	doesn't like cool cond.	<i>Ptychosperma macarthurii</i>	fairly fast, doing very well
<i>Raphidura australasica</i>	doing well in exposed	<i>Laccospadix australasica</i>	growing well in very shelt.
<i>Stephania japonica</i>	slow (position	<i>Normanbya normanbyi</i>	struggling (place
<i>Aristolodia indica</i>	flowers but no seed yet	<i>Lepodazamia peroffskyana</i>	doing well in several pos.
<i>Rauwenhoffia leichardtii</i>	seedling struggling in clay soil, lost 1	<i>Alocassia macrorrhiza</i>	looks tatty in winter
<i>Tecomanthi hillii</i>	flowers but no seed yet	<i>Alpinia coerulea</i>	seeds thrown out after 12
	deciduous in winter	<i>Bowenia serrulata</i>	mths. germinated in garden

Planting commenced early 1988. No ferns and few orchids have been planted." (Good work Judith - I counted 95 surviving species in your 3 year effort. Ed.)

RAINFOREST TREES AND SHRUBS OF THE BRISBANE AREA

A booklet by Lloyd Bird and P. Bostock prepared for Brisbane City Council, Nov. 1990, tabulated plants known to occur within the Council's boundaries. They survive only in small remnants of the original rainforests along the banks of the Brisbane River and its tributaries or on some rocky ridges (the dry scrubs). A short introduction encompasses the early locations, species logged, revegetation, checklist references, rainforest nurseries and published references. A list of almost 200 species with a very brief description of size and characteristics follows.

This publication should be available from the Council, otherwise Lloyd may be able to help with further information. It will be of great assistance to those wishing to grow local species in a garden situation, but more so to groups endeavouring to restore sites within the city to a condition similar to what may have been found before the European settlement that caused the destruction of most of the original vegetation. The Group has permission to quote material, with due acknowledgement to Brisbane City Council

N.S.W. WALKING TRACK OF THE MONTH - CORAMBA NATURE RESERVE (NEAR COFFS HARBOUR)

Even last century the rich alluvial flats of the Orara River downstream from Karangi and Coramba carried considerable areas of very tall dense luxurious rainforest. The first white men to work here were the cedar cutters who found and felled the highly prized red cedar trees. They were followed by the farmers who cleared the remaining trees to make way for pastures on these rich soils. So extensive was this clearing, that today it is difficult to imagine how the valley must have looked just over 100 years ago.

Fortunately one small area still remains as a reminder of the past, being situated on the southern bank of the Orara River beside the old Coramba showground which is now used as a sports ground. This rainforest contains many trees of considerable interest with good specimens of red and white cedars, massive buttressed yellow carabeens and magnificent white booyongs. Other commercial timber trees preserved here are sassafras, oliver's sassafras, jackwood, pepperberry, blueberry ash, red ash, black apple and white beech. Along the riverbank occurs species of trees with tough trunks and branches that bend with the floodwaters but do not break. Typical trees here are water gum, giant water gum, black bean and brush cherry (known by the aborigines along the coast as "woolgoolga").

The forest is in reasonably good condition except for the very dense fringe of both the large and small leaved privets around the edge. These introduced weeds are a major pest in the Orara valley because of their prolific fruiting (the seeds being carried great distances by the birds that feed on them), dense root system and ability to sucker from even small roots left in the ground. Their great danger lies within the forest when an old tree eventually crashes to the ground and leaves an opening. Normally, the young native tree seedlings present would quickly plug the gap and eventually grow into tall trees; but if they are not present, a privet thicket would be the end result. In previous years cattle gained entry grazing and trampling the seedlings within. The total exclusion of cattle is essential to the long-term survival of this unique remnant.

This summary is edited from a description written by Alex Floyd. Beryl and I were shown over the reserve by member, John Ross (prop. Lacebark Rainforest Nursery, Coramba), last year. The canopy remains in good condition, unfortunately much of the ground is covered by Wandering Jew (*Tradescantia albiflora*) which is surely preventing the germination of native species. At the time we visited, the Turnipwood *Akania lucens* were in very heavy blossom, a lovely sight.

BOOK OF THE MONTH

"Australian Rainforest Plants II" by Nan & Hugh Nicholson, Terania Rainforest Nursery 1988 - ISBN 09589436 1 3. Price around \$11.

This book of 73 pages continues on from their first (see Newsletter No. 5) and describes another 110 species that can be grown without too much trouble. They all have one or more outstanding features, either attractive flowers or fruits, foliage or form, each illustrated with attractive photographs taken by Hugh. Additionally a section briefly describes certain weeds and the problems or even total destruction that some can cause to established or recovering forest such as the more than 100,000 seeds that can be produced annually by just one adult privet or camphor laurel!. A more extensive description of growing a rainforest, listing basic requirements and other points to consider is helpful to both new and old growers.

Many of our members no doubt have a copy of both books in their homes, they would also make a suitable and reasonably priced gift to friends who are interested in plants and looking for some of the lesser recognised species for a garden or regeneration situation.

Copies are available from SGAP, horticultural specialists, or direct from Hugh and Nan.

BIRD OF THE MONTH - THE CASSOWARY, CASUARIUS CASUARIUS

Our second largest bird and one of the most spectacular is in danger of extinction. It can reach 2 m. high and is mainly limited to the tropical rainforest between Townsville and Cooktown, with a small population further north. Total numbers are estimated to be now only between 1500 - 4000, down from tens of thousands just a few decades ago.

Diet is mainly fallen fruit, also fungi, snails, dead birds and rats and occasionally they will enter gardens to obtain bananas and mulberries for example. Without these birds, far reaching consequences for the whole rainforest ecosystem will result. Many trees will not regenerate, the birds' droppings being essential for some species seed dispersal and germination. Normally, birds are solitary, shy, and strongly territorial, flightless of course. Plumage is of black hair-like feathers, head and neck naked, the skin being bright blue with an orange patch at the back of the neck, and a pair of red wattles at the front. On the top of the head is a horny casque or helmet. Nesting is winter/spring, usually 4 eggs laid in a scrape in the ground lined with grasses and other vegetation. Like our other large flightless birds, the male incubates the eggs and raises the chicks. Voice is a mix of rumbles, booms, roars and hisses, the loud call can be heard over a long distance on still nights.

The Mission Beach area south of Cairns once supported large numbers of the birds, but clearing 90% of local rainforest together with shooting and road kills has decimated the population. A local researcher has recorded the death of 25 birds in the past 2 years alone and is concerned that much remaining habitat is earmarked for "development". A former stronghold, the Atherton tableland is seeing a rapid decline from favoured sites around Lake Barrine and Malanda. These records are typical of what is happening throughout the birds' range. The most ridiculous aspect of all this is that community groups in north Qld. have begun replanting rainforest in a desperate bid to save the species while at the same time developers and speculators are clearing prime areas of lowland forest habitat.

MORE ON SYZIGIUM PANICULATUM IN THE WILD

Robert Payne writes " I suppose you heard I've recently found 2 large populations of *Syzygium paniculatum* - one at North Entrance - at least 50 trees and as many again in the Ourimbah Creek Valley. I've written a little article in *Cunninghamia* which may be in the next issue. Even though the Government announced the Wyrabalong National Park they excluded these trees. So they now lie in no-man's land alongside the N.P. boundary. This is even after they summoned me to Parliament House to give them a revue of the vegetation of the North Entrance Peninsula. I did manage to get the littoral rainforest in but this contains no *S. paniculatum*, at least that I know of".

(The North Entrance Peninsula, a rather special place, was Reserved Crown Land until 1988. Despite strong local opposition and objections from very many environmentally aware individuals and groups, the State Government determined to lease a huge area for yet another unwanted tourist development. Wyrabalong National Park is a "compromise", a small area to remain in public ownership, all that we have left of an extensive dune formation already dissected by a major development road. Ed.)

RAINFOREST AND BUTTERFLIES

Like most other components of the ecosystem many species of butterflies are affected by loss of habitat and environmental pressures (chemicals, pollution, climate changes etc.) Indeed very many are under threat, some are already extinct and others are listed as rare and endangered. Those of us interested in rainforest and aware of its importance to the "web of life" can certainly help to at worst reduce the rate of loss, but hopefully to ensure an increase in numbers of those animals and insects that rely on rainforest for food or shelter. One way to help is to grow particular plants that are known to favour invertebrate species.

We very much appreciate the permission of the Northern Rivers Rainforest Nursery at Burringbar NSW north coast to reprint an item from their Australian Rainforest Klub newsletter No. 2 titled "PLANTING TREES WITH BUTTERFLIES IN MIND" (Thanks to Bob Moffatt - National Parks Ranger)

"To attract butterflies to your garden it is necessary to plant those food plants that the butterfly larvae or caterpillars will feed on. Throughout Australia butterfly gardening is beginning to gain momentum and if those individuals or community groups engaged in Rainforest regeneration and restoration projects adopt larval food plants into their planting schemes, then it will be the butterflies that benefit. In turn, so too will the casual and serious observer of nature. Remember that if you are providing the salad, expect it to be eaten, so you're not going to grow that perfect plant so dear to the heart of the chemical industry. Once the trees are established resist the temptation to squash the grubs and experience the joy of adult butterflies flying through your garden.

For Club members we have introduced a Butterfly Tree Kit composed of a box containing 20 butterfly attracting species chosen from the following.

TREE SPECIES	TO ATTRACT	TREE SPECIES	TO ATTRACT
<i>Euodia elleryana</i>	Ulysses Swallowtail Emperor Moth	<i>Lophostemon confertus</i>	Common Redeye Eastern Flat
<i>Castanospermum australe</i>	Pencilled Blue	<i>Livistona australis</i>	Orange Palmdart
<i>Litsea leefeana</i>	Blue Triangle	<i>Citriobatus pauciflorus</i>	Bright Copper
<i>Neolitsea dealbata</i>	Blue Triangle	<i>Podocarpus elatus</i>	Eastern Flat
<i>Pararchidendron pruinatum</i>	Tailed Emperor	<i>Floydia praealta</i>	Pencilled Blue
<i>Randia</i> sp.	Bee Hawk Moths	<i>Macadamia tetraphylla</i>	Six Lineblue
<i>Wilkiea huegeliana</i>	Regent Skipper (E.S.)*	<i>Flindersia australis</i>	Orchard Butterfly
<i>Diospyros faciculosa</i>	Cephenes Blue	<i>Flindersia schottiana</i>	Orchard Butterfly
<i>Cassia marksiana</i>	Lemon Migrant	<i>Cupaniopsis anacardioides</i>	Dark Ciliate Blue
<i>Drypetes australasica</i>	Common Albatross		Candalides margarita
<i>Daphnandra micrantha</i>	Macleays Swallowtail		Hairy Lineblue
<i>Archontophoenix</i>	Orange Palmdart		Fiery Jewel
<i>Microcitrus australasica</i>	Orchard Butterfly		Six Lineblue
	Dingy Swallowtail		Felders Lineblue
	Capaneus Butterfly		Glistening Blue
<i>Cápparis arborea</i>	Caper White	<i>Harpullia pendula</i>	Cornelian
	Common Pearl White	<i>Pipturus argenteus</i>	White Nymph
<i>Callicoma serratifolia</i>	Eastern Flat	<i>Cinnamomum oliveri</i>	Blue Triangle
<i>Ehretia acuminata</i>	Hairy Lineblue	<i>Rauwenhoffia leichardtii</i>	Pale Green Triangle
	Common Aeroplane		Four Bar Swordtail
<i>Elaeocarpus obovatus</i>	Fiery Jewel	<i>Cryptocarya triplinervis</i>	Blue Triangle
<i>Cryptocarya laevigata</i>	Blue Triangle		Macleays Swallowtail
<i>Cryptocarya glaucescens</i>	Orchard Butterfly	<i>Alphitonia excelsa</i>	Small Greenbanded Blue
<i>Endiandra pubens</i>	Macleays Swallowtail		Fiery Jewel
<i>Ficus obliqua</i>	Common Crow		Copper Jewel

Further reading: Common I.F.B. & Waterhouse D.F. (1981)

'Butterflies of Australia' Rev.ed. Angus & Robertson.

* (E.S.) Endangered Species"

The Blue Triangle is quite happy with the spread of Camphor Laurel, so it is no way at risk, but it should be even further encouraged due to its effect however minimal on this invasive unwanted tree. You will know that many Laurels are host to this butterfly.

It would be good to have future "Butterfly of the Month" features covering the larval pupae and adult stages, food source, role in fertilisation, effect on particular species, as food for others in the food chain. Will some of you forward something along these lines? Please.

MORE ON BATS

A T.V. documentary in June stressed the importance of these animals by drawing attention to many interesting aspects of their place in the scheme of things, and of their economic and ecological values. Some of the points that I was able to note are briefly described.

Our survival may depend on bats as many plant species have evolved to rely on them for fertilisation and propagation. There are a number of natural predators that overall have minimal effects on their numbers. Man is the cause of their widespread decline.

About 1,000 species exist worldwide, a quarter of the planet's mammals, and are essential to the survival of life on this earth. They are found on every continent except Antarctica. 70% are insectivorous and collectively they consume huge quantities of insects that otherwise could devastate our food crops and forests. Bats are vital for regeneration of tropical Rainforests as a single bat can distribute as many as 60,000 seeds in one night. Seeds are excreted as soon as 20 minutes after they are eaten, and can therefore be spread over variable distances from source. On Guam, 40% of the Islands plants rely on bats for germination or fertilisation. Despite this two species have recently been annihilated there, while the third has been severely reduced in numbers. Now the Islanders are suggesting that Australia should export large numbers to them for the food that they consider as a delicacy.

In NSW only 10% of both Black and Grey Headed Flying Foxes have survived after a comparatively few short years of persecution and loss of habitat. It has been in only comparatively recent times that we became aware of their environmental and ecological importance, even now that we know of these values there seems little change in attitude of some sections of our society. As an example, Coffs Harbour Banana growers still wish to exterminate them. As far as I am aware, they remain unprotected in Queensland, their main Australian stronghold.

SAVING BY DESTROYING ?

Who says that the forestry industries are suffering from tunnel vision and are in fact so wrapped up in their own self-interest that they have completely lost contact with any form of intelligence whatsoever? The following quote is taken from the NSW Forest Products Association display at the Environment '91 exhibition: "One of the best ways to ensure that the rainforests are not destroyed is to harvest the wood and sell it." I rest my case. (Letter from Robert Passey, Kingsford to a Sydney Newspaper).

A SIMPLE METHOD OF IDENTIFICATION OF THE TREE FERNS OF THE N.E N.S.W. RAIN FORESTS

by Calder Chaffey

This method only refers to tree ferns found growing naturally in the area of N.S.W. from Pt. Macquarie to the Queensland border and from the coast to the tablelands. It is not suitable for the identification of specimens growing in gardens. These could be species brought in from other districts and more characteristics may have to be considered to make an identification.

Most keys depend on observation of material from the fern which is not always available at all times of the year. We have all experienced the disappointment of finding a specimen without the opportunity to return and identification has been made uncertain because the fronds were not bearing spores at that time of the year. The following key selects a number of characteristics which make identification certain, and in any season some of these can be found. Occasionally one characteristic alone is enough to make a certain identification, e.g. the two types of scales present on *Cyathea cooperi*. In the key below the mark "~" designates that this characteristic alone is sufficient to identify this fern if indigenous and growing in N.E. N.S.W. For use select from the headings "A" to "J" according to the material you have been able to find and work through each section to a possible identification. Of course if you are lucky enough to get three or four types of material you should come to the same conclusion in each section proving the identification.

Tree ferns are here defined as ferns having an upright habit with a woody caudex or trunk. The hard exterior of the trunk is covered on more or less of the upper part by the basal part of the stipes of the dead fronds and the extent to which these persist helps in identification. At least some of the trunk is composed of the fern rhizomes forming tough aerial roots visible on the lower surface. The top is crowned by a mass of spreading fronds. To conform with this definition *Blechnum nudum* has been included.

The tree ferns it is possible to find in this part of the state are:

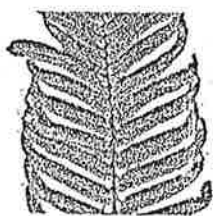
- Blechnum nudum* Cyanogens sub gen *Cyathea australis*
- Todea barbara* *Cyathea* sub gen *Cyathea cunninghamii***
- Angiopteris evecta* * *Cyathea* sub gen *Sphaeropteris leichhardtiana*
- Dicksonia antarctica* *Cyathea* sub gen *Sphaeropteris cooperi*
- Dicksonia youngiae*

- * Note: *Angiopteris evecta* is only known to exist naturally in N.S.W. by one specimen in the NE corner.
- ** *Cyathea cunninghamii* has never been recorded in N.E. N.S.W. but it is possible that it will be found in the Border or Nightcap Ranges as it exists only a few kilometers to the north on the Lamington Plateau. It is therefore included for completeness.

KEY

A LAMINA

- 1 Fertile and sterile lamina markedly dissimilar *Blechnum nudum* ~
- 2 Pinnatifid (sterile lamina) *Blechnum nudum*
- 1 * Fertile and sterile lamina similar 3
- 3 1-pinnate-pinnatifid to 2-pinnate *Todea barbara* ~
- 2 to 4-pinnate *Angiopteris evecta*
- 2-pinnate-pinnatifid to 3 pinnate *Cyathea*
- 3-pinnate to 3-pinnate-pinnatifid *Dicksonia*



FERTILE FROND-



-STERILE FROND

ULTIMATE SEGMENTS OF FRONDS



TODEA BARBARA



ANGIOPTERIS EVECTA



CYATHEA COOPERI



DICKSONIA YOUNGIAE

B STIPES

Round
Channelled on dorsal surface

Angiopteris evecta
All other tree ferns included in this area.

C STIPE BASES ON CAUDEX

- 1 Usually deciduous
- 1* Stipe bases persisting on caudex
 - 2 A few persisting
 - 2* Most stipe bases persisting

Cyathea cooperi
2
Angiopteris evecta
All other tree ferns of this area.

D STIPE BASES

Purple/black, shiny
Brown, smooth
Thick, fleshy, dark brown.
Rough with conical spines to 3mm.
Warty, brown
Sharp spines to 4mm, brown
Rounded tubercules to .5mm
Warty to smooth

Blechnum nudum
Todea barbara
Angiopteris evecta
Cyathea australis
Cyathea cunninghamii
Cyathea leichhardtiana
Cyathea cooperi
Dicksonia

E STIPULES AT BASE OF STRIPE

Small - 2-3cm., one pair
Large and fleshy - 7-15cm., one pair

Todea barbara
Angiopteris evecta

F CAUDEX (TRUNK) - all measurements UP TO:

- 60cm x 5cm, black, fibrous, often multiple
- 1.5cm x 40cm, black, fibrous
- 90cm x 45cm, dark brown-black
- 20m x 40cm, stipe bases persist upper 2/3
- 20m x 15cm, mostly covered with stipe bases
- 7m x 10cm, mostly covered with stipe bases
- 12m x 25cm, oval scars from deciduous stipes
- 5m x 80cm, matted roots below, stipes above
- 5m x 20cm, dark matted roots with stipe bases

Blechnum nudum
Todea barbara
Angiopteris evecta
Cyathea australis
Cyathea cunninghamii
Cyathea leichhardtiana
Cyathea cooperi
Dicksonia antarctica
Dicksonia youngiae

G SCALES (at developing frond bases)

- 1 Scales of one type only present
 - Dark brown, 2cm narrowly triangular
 - Glossy brown to 5cm x 3mm
 - Thin, pale, dull to thick, dark brown, shiny 1.5 to 3.5cm x 1 to 3mm
 - Silky pale straw to 6cm x 1mm.
- 1* Scales to two types present
 - Straw papery and dark brown needle-like

Blechnum nudum
Cyathea australis

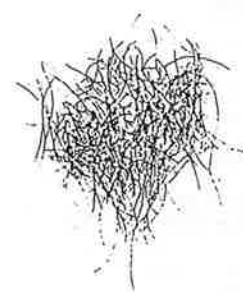
Cyathea leichhardtiana
Cyathea cooperi



SINGLE TYPE OF FLAT SCALE
CYATHEA AUSTRALIS



FLAT AND HAIR-LIKE SCALE
CYATHEA COOPERI



HAIRS
DICKSONIA YOUNGIAE

H HAIRS (at developing frond bases)

Glossy ginger brown
Bristly, glossy dark red brown

Dicksonia antarctica
Dicksonia youngiae

I INDUSIUM

- 1 Indusium present
 - 2 Indusium complete
 - 3 Indusium globular
 - 4 Indusium splitting into 2 lobes almost equal or remaining as a hemispherical scale
 - 4* Indusium composed of 2 values
 - 5 Indusia under 1.4mm
 - 5* Indusia over 1.4mm
 - 3 Indusium linear
 - 2 Indusium incomplete of a few fringed scales around the sori
 - 1* Indusium absent

2
3
4

Cyathea cunninghamii
5
Dicksonia antarctica
Dicksonia youngiae
Blechnum nudum

Cyathea australis
The other tree ferns of the area.

J SPORES

- | | |
|--|------------------------|
| 1 Fertile & sterile lamina very dissimilar | 2 " " " |
| 2 Fertile fronds narrow and sporangia covering ventral surface | Blechnum nudum |
| 1* Fertile & sterile lamina similar | 3 |
| 3 Sporangia not grouped into sori | 4 |
| 4 Sporangia covering the basal area of the ventral surface of the lower pinnae | Todea barbara |
| 3* Sporangia grouped into sori | 5 |
| 5 Sori oval | 6 |
| 6 Cluster of 3 to 7 pairs of sporangia near margin of pinna | Angiopteris evecta |
| 5* Sori round | 7 |
| 7 Sori solitary on the lobes of the pinna away from the central vein | 8 |
| 8 Sori under 1.4mm | Dicksonia antarctica |
| 8* Sori over 1.4 mm | Dicksonia youngiae |
| 7* Sori paired along central vein of pinna | Cyathea species |
| 1 to 10 pairs sori 0.5 to 1mm | Cyathea cooperi |
| 2 to 12 pairs sori 0.3 to 0.8mm | Cyathea leichhardtiana |
| 3 to 8 pairs sori 0.5 to 1mm | Cyathea australis |

SORI



TODEA BARBARA



ANGIOPTERIS EVECTA



CYATHEA COOPERI



DICKSONIA YOUNGIAE

GLOSSARY

Caudex	Axis or trunk of a tree fern consisting of stem and other rhizome
Hair	Epidermal appendage consisting of an elongated cell or number of cells
Indusium	A membrane covering a sorus
Lamina	The expanded part of a leaf
Pinna	The primary segment of a divided leaf lamina
Pinnate	A compound leaf where the lamina is divided and the leaflets arranged on opposite sides of a common rachis
Pinnatifid	A lamina cut into lobes each side about half way to the midrib
Pinnate-Pinnatifid	Divided first pinnately (1X, 2X, 3X etc) with the segments of the final division cut into lobes
Rachis	The stems of a compound leaf bearing the pinnae or pinnules
Rhizome	An underground stem
Scale	Thin flattened paper structure attached to part of a fern
Sorus	A cluster of sporangia on the fertile part of the lamina
Sporangium	An organ producing and containing
Stipe	The leaf stalk from the caudex to the lamina
Stipule	An appendage at the base of the stipe

As Calder stated, this key was developed specifically for the North East corner of NSW but I should imagine that it would be of assistance in other areas, certainly it could be used as a basis and modified to suit other regions.

Our thanks to Calder for his work in preparing this aid in identification and for his approval to reproduce it.

ANOTHER N.S.W. RAINFOREST BURNT OUT

Crommelin Arboretum at Pearl Beach was completely burnt out on 23/12/90 from the bushfire. All the Rainforest trees were completely burnt and the misting/watering system destroyed. The plants were raised from seed mainly given to me by Lloyd Bird and other helpful enthusiasts. They have been growing amongst the forest along the creek since 1976. But all is not lost. They have all coppiced from the base of the main stem or produced new leaves from the stem. It was interesting to note that the bushfire, where it blackened the trunks of the Eucalypts, it did not affect the Rainforest trees in this way. Most show little, if any evidence of fire blackened stems. Somehow the stems are able to resist the fire. In some species, such as White Beech the trees exuded copious amounts of sap as the fire passed through which may have been some sort of protective mechanism against the fire. The fire was a particularly hot one. It left no foliage in the crowns of the Eucalypts, completely burnt out some of the Blackboys, and destroyed the watering system. Even my rare species such as Diploglottis campbellii and Hernandia bivalvis are producing new stems. I was so enthusiastic about this I gave Don Blaxell (NSW Herbarium) a list of the species that have regenerated. I only hope the young foliage leaves can get through our Winter and now hope for the best. (From Robert Payne, Umina).