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S.G.A.P. EUCALYPTUS STUDY GROUP
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A.R.Bean,
P.O.Box 397,
Nambour, 4560, Qld.

Dear Members,

I am forced to discontinue the information summaries which have been a feature of newsletters over the last two years. This is due to lack of response from members. Although numerous members, in their recent letters, said they wanted the summaries to continue, only SEVEN members contributed towards it! Clearly a case of all talk, no action. I do realise that some members are unable to contribute due to their lack of knowledge of the species concerned. However, most members have no such excuse, and I'm very disappointed at this apparent lack of interest.

I hope that members will contemplate the future of this newsletter - it is only as good as the members make it. At the moment, it's like trying to make a cake without any ingredients.

Please contribute. Even suggestions as to the type of information you would like to see presented, would be helpful. What do you want to know about eucs? Write about your favourite euc species; your favourite place where eucalypts are prominent; cultural techniques you have used to establish your trees; tree planting projects you know of; information on pests and diseases of eucs; newspaper clippings relating to eucalypts; or anything else you can think of...

Welcome to the following new members, who have joined since July:-

SUBSCRIPTIONS

May I remind members that subscriptions were due in July. The amount is $4. A cross at the top of this page will indicate that your subs are overdue. Unless this situation is rectified before March, this will be your last newsletter.

Eucalypts outside Australia

Eucalypts have been planted all around the world in tropical and subtropical countries, but naturally occurring stands of Eucalyptus outside Australia are restricted to the islands north of our continent.

Out of the approximately 600 species of Eucalyptus that are known to exist, there are just two species which do not occur naturally in Australia. They are:
1. E.urophylla (Timor Gum); a large tree which grows on Timor and several other nearby islands. It is in the Eastern Blue Gum group, and young trees are very similar in appearance to E.grandis.
2. E.deglupta (Kamarere); a very large and fast growing tree, which grows on New Britain, New Guinea, Celebes, Ceram and Mindanao (the large southern island of the Philippines). It is in the subgenus Telocalyptus, and its three relatives grow in the Australian tropics.

The story does not end there. There are about a dozen eucalypt species which are shared between Australia and our near northern neighbours. E.alba grows on Timor and on the dry country around Port Moresby.

All of the others are restricted to New Guinea and the Torres strait islands. They are E.nesophila, E.polycarpa (or a species with affinity to it), E.papuana, E.tessellaris, E. sp aff dichromophloia, E.confertiflora, E.pellita, E.brassiana, E.tereticornis and E.leptophleba.

The main eucalypt areas are the low altitude country of south-western Papua, and the dry savannah woodlands around Port Moresby.
There are no eucalypts native to New Zealand, Norfolk Is, Lord Howe Is, New Caledonia or any other Pacific islands.

Slide Library

The slide library continues to be very popular, although contributions towards it have been rather sparse lately. There are still just the two slide packages, but both have been expanded. The tropical/eastern states batch is available now for loan, and in general, members can expect only a short waiting period before receiving the slides.

Donations of slides for addition to the library will always be gratefully accepted - they may feature bark, flowers, habitat, pests or diseases, leaves, groups of trees eg.windbreaks, landscaping ...etc.

Cyclones and the Need for Trees by Tom Wyatt

(reprinted from SGAP Qld region Bulletin, November 1979)

During my address, I will endeavour to create a greater awareness of the social benefit of trees and their need in cyclonic areas and problems associated with the planting of trees in the suburbs of a city.

In the tropics, especially along the coast, the greatest problem to overcome is the fear people have of cyclones and damage they consider will be caused by trees in such a storm. How do we overcome this fear or attitude and where do we start? Possibly the first area is in the schools, for these young people are going to have the responsibility of creating and maintaining a balanced environment for the future civilization. Young minds are much easier to educate than to re-educate or change the stubborn minds of adults. Societies such as S.G.A.P. and other civic authorities must do more work in creating greater awareness, so that tropical cities can be transformed from urban deserts to a visual, pleasurable environment. Possibly greater use of the media during cyclone seasons to create an awareness of the need for trees could be most beneficial, especially when damaging articles are often printed. In most cases, this is because the media are only looking for sensationalism, which can be detrimental to tree planting promotion.

I personally experienced the wrath of cyclone "Althea" in Townsville, which caused considerable damage to property and trees, and I happened to be in Rockhampton during cyclone "David's" visit. It is from these experiences that I base the following observations.

In the older areas of Townsville, where trees were established for many years, possibly twenty years or more, they received only partial damage. Some lost minor branches and others were partially defoliated. It was in these areas where trees withstood the intensity of the cyclone that visual damage to buildings appeared much less than in the new or more recently developed areas. Areas developed only a few years prior to the cyclone, appeared to suffer extreme damage to buildings and it was also obvious the lack of trees within these new areas. During development, usually the larger specimens of trees are either removed by developers or, if they survive the development, they are destroyed by the new householders, because of their fear of the damage trees cause during a cyclone. In the areas where trees were few and far between, scattered debris was more in evidence, especially sheets of roofing iron. Due to the lack of trees, loose debris was not trapped amongst the branches, as in the older developed areas. Housing and commercial buildings received severe damage by flying debris which mainly consisted of building materials. This debris becomes dangerous missiles which are travelling at very high speeds when they collide into other buildings. They partially dislodge rooves and walls, so that a chain reaction situation is created. In the areas where there were more developed trees, much of the debris capable of being carried by strong winds was lodged in the trees and therefore prevented structural damage to other buildings.

Here is a example which emphasises how much an asset trees are in a cyclone. Cranbrook, one of the newly developed areas, consisting of conventional high blocked houses, was generally lacking in mature trees, with the exception of the occasional large gum. A large blackbutt (Eucalyptus tessellaris) was not removed by the developers and was situated on the footpath, on public property. The tree in question was approximately 60cm in trunk diameter and over 20m tall and it suffered root damage during the construction of the street. A resident, whose property was adjacent to this tree, endeavoured to have council remove it, as he considered it a liability, especially as a cyclone was imminent. However, due to staff shortages (many employees were on their annual Christmas leave) and because other work was considered to be of a more urgent nature, the tree was not lopped prior to "Althea's" arrival.

Houses of all types were being partially demolished and unroofed and the flying debris caused untold destruction. This large blackbutt was uprooted before the cyclone reached maximum intensity and with a thunderous crash came to rest across the house of the resident who had requested its removal prior to the cyclone. This house was rocking on its very foundations and the roofing iron was beginning to lift as the tree fell. Once the tree came to rest on the house, the vibrations ceased and the roof was not removed during the cyclone. The only structural damage the house received was to the eaves of the building where the tree crashed. This resident was most ecstatic at the time, as all around him similar houses were completely unrooved and partially demolished, while his residence remained intact.

This particular case remains vividly in my mind, as I was personally involved in the removal of the tree from the building some days later. Residents all around the immediate area, whose properties were severely damaged, suddenly became legal advisors and were offering advice for this man to sue the council for neglect. They claimed his house would not have received any damage if the tree had been removed when originally requested. These people would not be convinced that the tree saved the house from destruction, even after listening to the vivid description of the owner. Being typically Australian, they would use good old Australian vocabulary to describe such a story and claim that he was not "the full dollar" for not attempting to take legal action. This attitude is typical of many residents in tropical cities in Queensland - lack of awareness for the need for trees in cyclonic areas.

I am not saying trees did not cause any structural damage at all to buildings, but it was clearly evident that more buildings were damaged in the more recently developed areas where there were very few mature trees, than in the older areas which boasted many and very well established trees. Even in the poorly-treed areas, damage was blamed on tree debris by the majority of people, although portions of another building which was transported from a kilometre away were lodged against the partly demolished walls etc. People failed to see this as a primary cause, especially when a tree branch was in very close proximity. Tree branches are not conducive to transport by wind over considerable distances due to their circular form, the surface area offered to the wind and their weight. It was clearly evident that trees trap flying debris, which undoubtedly saved many buildings from unnecessary structural damage. Even trees uprooted showed signs of having trapped enormous amounts of building debris, which possibly not only saved buildings, but human life as well.

Some trees are more suitable than others for planting in cyclonic areas. The eucalypts can withstand strong winds due to their sparse foliage. However, they lose minor branches 3-6cm in diameter. The larger branches survive in part due to the loss of these minor branches and their ability to sway or their tensile strength during the peak of the cyclone.

Much unnecessary lopping is carried out in the interest of safety by many people. This unnecessary lopping is why many trees failed in "Althea" and "David". You often see in the modern suburbs where large trees, especially Eucalypts, left by developers are reduced to within 5 metres of the ground. In the tree's endeavour to regenerate, numerous new shoots are produced around and below the finished lopping. Leaf growth is increased by 50-100%. Therefore, this increases the tree's ability to manufacture starches and carbohydrates. With this dramatic increase in food supply, the original trunk develops greater strength and becomes more rigid or firm and yields very little in high velocity winds. All this young growth continues to develop and we end up with a huge mass of branches. In strong winds these branches whip and sway, but since the trunk has lost much of its flexibility and does not yield, the young branches end up being actually twisted from their regrowth point. At this stage the young branches are mainly sapwood and true lesion to original pith of the tree has not commenced. These young branches can then be hazards in cyclonic winds.

One of the very important factors governing a tree's suitability to withstand cyclonic conditions is the development of a sound root system. It is a well known fact that trees growing on shallow soil over tight, almost impenetrable clay are much more subject to wind-throw than those growing in a deep sandy loam. In low rainfall areas and where there is no regular watering program, tree roots may grow laterally to distances many times the height of the tree. This type of root development is not favourable in cyclonic areas, as the bond between the root system and the soil is greatly reduced due to the excessive moisture from the continual rain. Many suburban areas in our cities have this deep, almost impenetrable clay and residents endeavour to overcome this problem by excavating the clay to depths of 1-1½ metres and 2 metres in diameter. However, tall growing trees should not be planted under such conditions, as root systems will not develop beyond the excavations. Normally in the tropics, this type of planting does not meet with success, as the excavated area becomes waterlogged during the wet season, thus the tree normally dies. The trees that do tolerate these conditions invariably become statistics after a cyclone and our task of encouraging people to plant another tree is not made any easier, due to such an experience. It is therefore important that everyone concerned with the planting of trees investigate their suitability to the local climate. Commonly, enthusiasts and keen gardeners endeavour to cultivate species foreign to their environment, with the obvious disastrous results. Much research is yet to be carried out on the suitability of trees for cyclonic areas.

Trying some "new" eucalypts

As you travel around your district, you may notice that there are only a few eucalypt species that are widely planted. In many cases, two or three eucalypt species dominate the plantings, which is a shame, as there are bound to be at least several other species which could be used with equal effectiveness.

For example, in southern coastal Queensland, E.torelliana is widely planted; almost to the exclusion of other species. This situation has developed because it grows quickly on a wide range of sites, but in many cases, other species would serve better eg. E.conglomerata, E.robusta for swampy areas; E.trachyphloia, E.umbra ssp carnea for dry hillsides.

Lindsay Daniels has suggested that members test "unknown" species which may prove very suitable for local conditions and replace, in part, the standard overused species. If you have discovered a species that is not widely cultivated in your area, but has great potential, write and let me know.

To start the ball rolling, Lindsay has provided information on the Black Ironbox (Eucalyptus raveretiana), which is a little known species, but proving to be very useful in and around Biloela.

E.raveretiana is a moderate sized tree, often 12-20 metres high, but reaching 30 metres on favourable sites. It grows in a coastal belt 80-160 kilometres wide from Rockhampton in the south to Townsville in the north.

The bark is compact and scaly on the trunk. Most or all of the branches are smooth, and are a dirty bluish colour. Leaves are lanceolate, up to 13 x 2½cm, firm in texture and discolourous. It flowers in summer in large terminal panicles. Individual buds are only 1-2 x 1½mm. Fruits are hemispherical, 1½ x 2mm, with strongly exserted valves.

It has the smallest buds and fruits of all eucalypts.

Black Ironbox has been cultivated in the Rockhampton area for many years, but I am not aware of any significant plantings in other towns or cities. Lindsay has supplied the following summary:-

E.raveretiana is a moderate to fast growing tree on suitable sites. It prefers deep sandy loams, but will grow on most soils. It has moderate drought tolerance (suitable for regions having 650-1000mm per year). It is a good shade tree and is heavily foliaged.

Growth is rapid in the seedling stage, and it is easy to rear (no significant pest/disease problems). Age to flowering unknown, but not an early flowerer.

Probable range for successful growth - Townsville to Brisbane, and up to 300km inland, although supplementary watering may be necessary in inland areas eg. good "lawn" tree. Lindsay also mentions that E.cupularis, E.bakeri, E.dwyeri, E.morrisii and E.hallii (all virtually unknown in cultivation) show promise in the Biloela district.

Members Letters

Eric Anderson from Rockhampton reports that there is an interesting area along one of the local creeks, where hybrids of E.alba and E.tereticornis can be found. The trees are fairly large, white trunked, with large leaves more the colour of E.tereticornis, while the shape is midway between the two parent species.

Rod Cary from Perth thinks that the westernmost eucalypt species may be E.oraria which grows on the coast in the Shark Bay area. This species is a small gum-barked mallee, which may be useful for coastal planting.

Irene Champion from Mackay, recently went to the Townsville conference (Qld SGAP) and the trip to Burra Range (near Pentland) which followed. She writes " we saw some beautiful E.similis (Yellowjacket). Although none were flowering, some were very heavily in bud. We also saw lots of E.shirleyi (Shirley's Ironbark), E.setosa (Rough-leaved Bloodwood), E.dichromophloia (Variable-barked Bloodwood) and a stand of E.miniata (Darwin Woollybutt)."

Judy Smith from Blaxland tells us that the local SGAP is setting up a "Register of Significant Trees" in the Blue Mountains. So far, this includes a pair of Eucalyptus oreades (Blue Mtns Ash, estimated age 250-300 years) and a large E.burgessiana (a rare mallee-ash) at Faulconbridge.

Trix Nickolls from Mt Gambier recently sent me a marvellous batch of eucalypt specimens growing in her area, both natural and cultivated. Trix has also sent a list of euc species naturally occurring between Mt Gambier and Adelaide (via Penola, Narracoorte, Keith and Western Hwy 8). She includes a description of each species' field appearance and where exactly it can be seen. This would be invaluable for anyone wishing to study the eucalypts of south-eastern S.A. (I'll send a photocopy for anyone interested). I hope to make use of it myself one day soon!

More on Tree Roots

For a tree to remain healthy, the roots must be able to obtain adequate water, minerals, and also have a supply of oxygen. A porous, well drained soil generally provides the best conditions for tree growth.

All the raw materials for making the numerous compounds found in a tree, come into the tree via the roots (except the Carbon Dioxide from the atmosphere). Many (possibly all) eucalypts have mycorrhizal associations existing within their roots. A mycorrhiza is a symbiotic relationship between tree roots and a fungus. The fungus, which often exists as a mantle surrounding the roots, passes on minerals from the soil and in return receives carbohydrates for its existence.

There are six major minerals and about seven minor minerals required by eucalypts (and most trees). In the undisturbed forest environment the falling leaves and other decaying matter (insect remains, animal droppings etc.) which cover the forest floor provide the minerals required for tree growth. However, in artificial surroundings such as paddocks or gardens, this debris is absent. For this reason, planted eucalypts very often benefit from the application of fertiliser.

The root environment may be adversely affected by any one of the following situations, generally resulting in declining health or death of the tree.

Changes in soil water - housing development and road building drastically alter the water available to trees. A wall may divert water from a tree, or may act as a dam and so kill roots by waterlogging them. Roads, paths, rooves and other impermeable surfaces cover a large proportion of the soil in built up areas, diverting rain which would normally seep gradually into the soil. Where possible, building and drainage should allow for the water supply to a tree to remain unchanged. When trees die as a result of an alteration to soil water level, a new species should be chosen that is more suitable for the new situation.

Swimming Pools are responsible for the death of many established trees. During construction of in-ground pools, the roots of nearby trees are severed, and the placement of the pool may affect the drainage pattern of the site and so kill trees lower down the slope. Increased soil water from leakages or at times when the pool is emptied or during cleaning may also affect trees. Chlorine entering the soil regularly can seriously debilitate trees by damaging the immediate root environment.

Driveways built over the root system of a tree leads to compaction of the soil, which in turn reduces the aeration (oxygen supply) in the top layers of the soil. More obvious is the interruption of water and mineral infiltration. The crowns of trees affected in this way become thinner, branches die; and depending on the species and extent of the damage, the tree may die.

A little planning and forethought can often save trees - where walls are built close to trees, it may be possible to build them with an interruption in the foundations. This saves many roots from being destroyed and also helps to maintain the soil water at its original level.

Where you are planning to change the immediate environment of existing trees, ponder for a while the effects these changes will have on the trees, paying particular attention to the often neglected roots and their needs.

EUCNEWS * * * * * * * * * * * *

The long awaited new edition of "Forest Trees of Australia" has been published at last, and is now widely available in the bookshops.

This latest edition has maintained the high standard of the publication, and even more species are described, especially in the non-eucalypt section. 137 eucalypt and 2 angophora species have been described and photographed, and as one would expect, the book concentrates on the larger species and those most valuable for their timber. Notable omissions from the 3rd edition are included, such as E.intermedia and E.rummeryi.

This edition is of massive proportions, so that it is now out of the realm of an "in-the-field book". Each species is comprehensively described and photographed, after the style of previous editions. While most of the photos are in black and white, there are some excellent colour plates of bark variations and forest types.

There is an excellent introductory section on Eucalypts, and each group of eucs eg. bloodwoods, red gums is introduced and a key to the various species provided. The distribution maps are improved in this new edition. Formerly the species distributions were given as a solid block, but now "dot localities" are shown, giving a more reliable and accurate indication of the distribution.

This should be an extremely valuable reference for tree lovers around Australia. Of course, inland area trees are not as widely represented, but even Alice Springs residents will recognize a few of their indiginous species in the book.

Eucalypt mysteries - solved and unsolved

Eucalyptus fitzgeraldii was discovered by W. Fitzgerald in 1905 during his extensive botanical expedition through the Kimberleys, and was subsequently named in his honour by botanist, W.F. Blakely.
But for many years after its discovery, it was "lost", undoubtedly because of vague locality information, and very poor vehicle access to the area.
The book "Eucalyptus Buds and Fruits", which illustrates the buds and fruits of all eucalypts, shows a blank space for E.fitzgeraldii. A note in the introduction of the book states simply that "buds and fruits have not been available". E.fitzgeraldii is listed in "Australian Endangered Species: Eucalypts" by L.D. Pryor, but is not discussed in the text, as the distribution is "not adequately known".
Just recently, E.fitzgeraldii has been rediscovered in an isolated area of the western Kimberleys. It has broad leaves and is most closely related to E.oligantha. The bark is of the typical box type, and is not papery as has been suggested in some books. Although few stands were located, it seems likely that more would exist in nearby areas.

Eucalyptus steedmanii, an ornamental species from W.A., was first collected in 1928, and then again in 1938, but was lost in the wild for forty years, from 1938 to 1978, despite several extensive searches. Seeds were collected from the early specimens, and over the 40 years when it was lost, it became a very popular species in cultivation, with its distinctive shape and four-angled fruits. As the years went by, more and more people began to think that it was extinct in the wild, but luckily it was relocated in 1978 in a small area east of Hyden. Only two or three stands of a couple of hectares are known, and while it is certainly a very rare species, it is perhaps not as endangered as some other species.

The last major remaining eucalypt mystery concerns Eucalyptus rameliana, which is known only from one incomplete specimen, and the locality given is extremely vague. It was collected by the famous explorer, Ernest Giles, near the Gibson Desert over 100 years ago. Although the specimen is incomplete, it seems likely that it is a distinct species, and not just an isolated locality for another better-known species. Botanists specialising in eucalypts are keen to find it, but it may remain a mystery for many years to come, as the area has no roads and there are many thousands of square kilometres that need to be searched.

The Meaning of Eucalypt names Part 2

Many species names end in -ensis. Where this is the case, it refers to a geographical locality or town, often where the species was first found or is most common. Most of these are self explanatory:-

delegatensis	refers to	Delegate, NSW	gilbertensis	refers to	Gilbert R, Qld
parramattensis	"	Parramatta, NSW	kybeanensis	"	Kybean, NSW
normantonensis	"	Normanton, Qld	pilligaensis	"	Pilliga dist,NSW
mannensis	"	Mann Range, SA	badjensis	"	Big Badja, NSW
kombolgiensis	"	Kombolgi, NT	desmondensis	"	Mt Desmond, WA

A few however, are rather mysterious. E.ebbanoensis presumably refers to Ebano Springs, south-east of Geraldton, WA.
E.camaldulensis refers to Camaldoli, a place in Tuscany, Italy, where the type specimen was grown!

Prefixes referring to numbers are reasonably common in eucalypt species names:-

bicostata - means "two ribbed" (buds and fruits)
bigalerita - means "two caps" (refers to the double operculum)
dichromophloia - means "two coloured bark"
diptera - means "two wings" (angled hypanthium at the bud stage)
triflora - means "three flowered" (inflorescence)
trivalvis - means "three valves" (fruits)
tetragona - means "four corners" (buds and fruits)
tetrapleura - means "four ribs" (buds and fruits)
tetraptera - means "four wings" (buds and fruits)
tetrodonta - means "four teeth" (fruit) tetra (four) and odontos (tooth)
quadrangulata - means "four angled" (twigs).

A couple of other interesting names are as follows:-
E.moluccana - type grown in the Calcutta Gardens from seed reputed to have come from the Moluccas. NB. E.moluccana does not occur outside Australia.
E.coccifera - refers to the Coccus infected foliage on the first material collected. Gk. coccus (grain, seed, round gall, pill) and -fera (bearing, carrying).