

AUSTRALIAN FOOD PLANT STUDY GROUP

Newsletter Number 6 January 1988



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Mangroves (mostly Avicennia & Salacia)
Scrub Nettle • Billardiera longiflora
More on ethnobotany • Earthworms
Upcoming Events • Letters • Reviews
Recipes • and so much more.....

EDITED BY: Rodney Barker PO BOX 62, Kangaroo Ground, VIC 3097

Thanks to all our contributors.

No editorial guff this issue - all hard information (more-or-less). I'll get back into the swing of things next issue.

Due to bad record-keeping, some issues of the last Newsletter were not sent - this should be set right now. If not, please write & tell me.

Membership and Subscriptions:

Subscription is \$3.00 per annum, payable in August. Because I have had some funds in reserve, I have been able to "carry" non-financial members for this issue. However, this cannot continue indefinitely. Please pay so that I know you are interested.

Also please make it clear what you are paying - to you, it may appear obvious what a cheque for \$6.00 is for, but for me, I don't know whether it is intended as advance payment of fees, a request for back-copies of newsletters, or a donation.

Talking of back-copies, these are still available for all issues for \$1.00 each, including postage. A bargain !

Black bean holds AIDS control hope

By GRAEME O'NEILL,
science and technology reporter

Picture: GEOFF AMPT

Researchers in Holland have shown that a compound obtained from an Australian rainforest tree, the black bean or Moreton Bay chestnut, inhibits the spread of the AIDS virus in human cells.

The compound, an alkaloid called castanospermine, is believed to disrupt the synthesis of a vital protein in the outer coat of the AIDS virus, preventing it from attaching to cells in the first step of its infectious cycle.

The compound's promise was first reported in August ('The Age', 29 August) by a researcher from the National Institutes of Health in the United States, who told the annual congress of the Australian and New Zealand Association for the Advancement of Science that castanospermine was among the most promising compounds to emerge from a mass-screening program to find potential anti-AIDS drugs in plants.

Castanospermine is extracted from the leaves and seeds of the black bean, *Castanospermum australe*, a handsome, glossy-leaved tree found in tropical Australia and nearby Pacific Islands, now popular as a specimen tree in parks and gardens as far south as Melbourne.

The seeds, contained in banana-sized pods, are particularly high in the alkaloid, which is thought to



Janine Hurse, a technical assistant at Melbourne's Botanic Gardens, with a black bean pod and the tree at the gardens yesterday.

deter animal predators. The toxicity of the seeds to animals first brought them to scientific attention in 1980, before the first cases of AIDS were detected in the United States.

Dr Merv Hegarty, of the CSIRO division of tropical crops and pastures in Brisbane, and a British colleague, Dr Arthur Bell, director of the Royal Botanic Gardens in Kew, isolated castanospermine

from the seeds, and with Dr Linda Fellowes showed that it worked by inhibiting an enzyme in mammal cells called glucosidase.

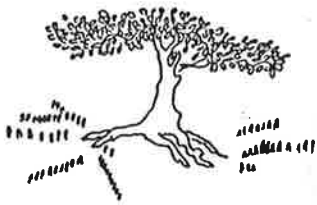
It is this mechanism that appears to be crucial in disrupting replication of the AIDS virus in human cells. After the virus enters the cell, it "hijacks" the cell's machinery to manufacture the components for assembly of new virus particles.

A key component is a viral protein called gp120, which has a high proportion of sugar-based molecules, which are a stripped-down version of a much larger precursor molecule. The stripping, which is essential before the molecule can be incorporated in the gp120 protein, is carried out by two enzymes called glucosidase and mannosidase.

According to the Dutch group, headed by Dr Ron Gruters of the University of Amsterdam, castanospermine works by blocking the action of glucosidase - it results in a defective gp120 protein.

In a recent paper in the British science journal 'Nature', Dr Gruters' research team describes how castanospermine, and two other different compounds that also inhibit the glucosidase stripper enzyme, not only prevented the virus from infecting healthy T-cells, but prevented the deadly clustering of healthy and infected cells seen in AIDS victims.

Dr George Holan, of the CSIRO division of applied organic chemistry in Melbourne, and Dr Ian Gust, of the Fairfield Infectious Diseases Hospital, are also carrying out tests on castanospermine - according to Dr Holan, it is logical that Australia, home of the black bean tree, should seek to benefit commercially from any anti-AIDS drug that might be derived from the plant.



MANGROVES

Mangroves represent one of the most productive ecological zones, supporting a rich variety of species. Mangroves are found in all mainland states, but are threatened by development and pollution.

Whilst mangroves are not as rich in food plants as, say, rain-forests, they nonetheless contain many plants which could be utilized for food, medicine and other purposes. It is essential that mangrove communities be protected until they are at least understood well enough to be used without their destruction, or reducing their diversity. An excellent book by Richard Lear & Tom Turner MANGROVES OF AUSTRALIA Uni of Qld Press (St Lucia, Qld) 1977 provides information on the biology, uses and importance of mangroves.

Their potential is still to be assessed - for example, chemicals which have tumour-inhibiting properties have been isolated from mangrove plants (sorry, no details). Here are some notes on some of the useful mangrove & fringe plants, mostly culled from that book, to serve as an example of the potential of these communities, & perhaps encourage attempts at their use and cultivation. Next time you visit some mangroves, sample a few fruits, or perhaps even try growing a plant or two.

Avicennia marina var australasica.

Occurs naturally in poorly drained, saline, anoxic, fine-grained soil which is rich in organic matter and slightly acidic.

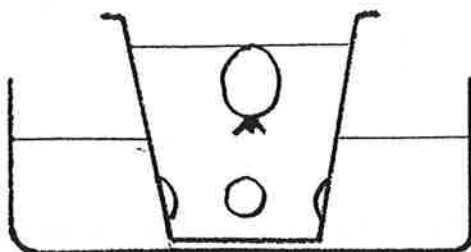
It does not need salt to develop normally, although optimum development in cultivation is in sea water diluted 50%.

Maximum flowering and fruiting roughly coincides with summer. The viviparous seedlings remain viable for some months, whilst being dispersed by water.

Avicennia concentrates & excretes salt through its leaves. These leaves are very rich in nitrogen & phosphorus, and break down rapidly.

KEY - Leaves opposite, ovate, simple, usually less than 12 cm, veins yellowish, underside of leaf grey. Bark is greyish and fissured.

CULTIVATION - From my reading of the literature, I would have suggested cultivation was most likely to succeed in well-drained pots watered with fresh water. To my surprise, "John" on the television program "Burke's Backyard" offered the following advice for growing Avicennia seedlings (3/10/87) :



Cut large holes near the base of a plastic cup (for pneumatophores to grow out of), & fill with 1/2 vermiculite & 1/2 sand (from where mangroves grow). Place seedling just under surface, and sit in a container of water (salt is OK) Be very careful not to damage pneumatophores when transplanting seedlings.

"Mangrove timber is used to make frames for growing oysters."

FAMILY

AVICENNIACEAE

A small, exclusively mangrove family with most species in the tropics.

GENUS

Avicennia Linn.

The genus is named in honour of Abu Ali Husain Ibn Abd Allah (Abu Ali Alhosiyan Ben Sina) 980–1037 A.D., better known as "Ibn Sina" or "Avicenna", a famous Persian physician, naturalist, mathematician and philosopher who lived at Bokhara. The genus consists of eleven species widely distributed over tropical and mid-latitude areas of the eastern and western mangrove groups.

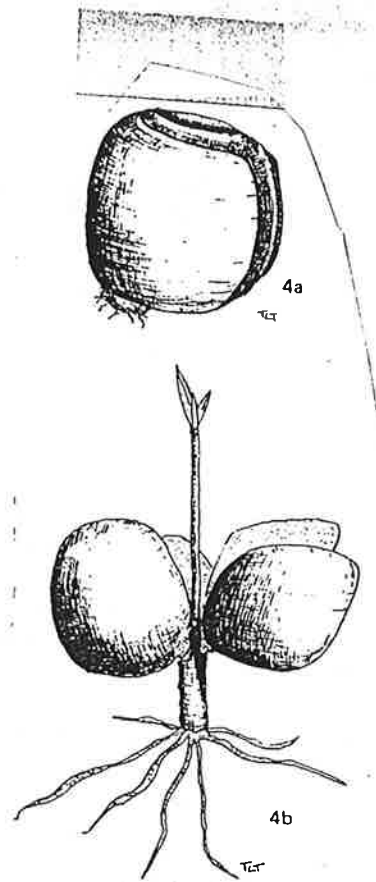
SPECIES

Avicennia marina (Forsk.) Vierh. var. *australasica* (Walp.) Moldenke.

The grey or white mangrove. Aboriginal names: *tchunt-chee*, Cooktown; *parpoon*, Moreton Bay; *marran* and *goorn-doojno*, Gulf of Carpentaria.

This species is the most widespread mangrove in Australia, and is the only species occurring south of Bateman's Bay on the east coast, and south of Carnarvon on the west coast. In Western Australia *Avicennia marina* reaches as far south as Bunbury (33° 45'S). In South Australia the species occurs in Spencer's Gulf and Gulf St. Vincent, and in Victoria the most southerly occurrences are at Western Port Bay and Cowes Inlet (38° 45'S). *Avicennia marina* is potentially capable of growing on any part of the mangrove shore unless displaced by other species. This hardy mangrove tolerates the least favourable environment, in arid saline areas producing a large spreading root system with a sparse system of leaves. Under good conditions *Avicennia marina* grows as a medium-sized tree with a spreading leafy crown and finely fissured bark. Numerous pneumatophores protrude from the lateral roots.

Avicennia marina is the major pioneer species. In much of the Australian mangrove community it occurs as a Seaward fringe several trees wide, and is also present in a stunted form in the Landward zone. The viviparous seedling has a pair of large cotyledons (seed leaves), which gives it the appearance of a large lima bean.



4. *Avicennia marina* (a) newly germinated (b) established seedling

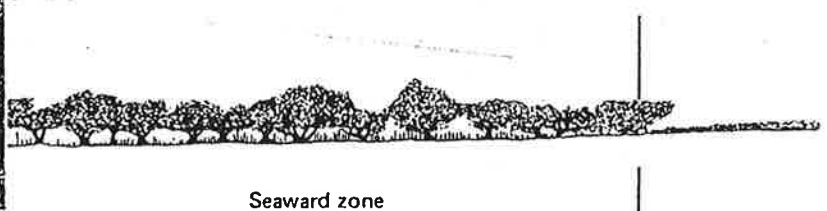
People in south-east Asia have kept a close ecological link with the mangrove community which provides them with many resources. Here is a list of the numerous uses these people have for mangroves. (Not having tried the medical preparations, the authors cannot guarantee their efficacy.)

Avicennia marina

hard timber for tools, boat knees; bark for tanning; ashes for washing cloth; ointment from seeds for ulcers; large branches used for water pipes in Burma; cooked fruit is edible.



Fig. 45. The seaward fringe of *Avicennia marina*. Mary River, southern Queensland.



Transect: Westernport Bay, Victoria, Latitude 38° 45' south

AVICENNIA RECIPES

from The Botany Club of the University of Qld
WILD FOOD RECIPES Vol. 1, 2nd Ed.

Olives a la Avicennia

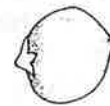
The main problem with Avicennia fruit is getting rid of the tannins. "Olives" can be prepared by extracting the tannins in a strong brine solution. The process will take several weeks or longer and the brine solution should be changed regularly. Preparation is finished when the brine solution remains clear.

Avicennia Garnishes

Finely chopped, the fruit provides an interesting garnish for salads. Used in this way, the tannin is not too strong.

Avicennia 'Fruit' Dip

3 cups fruit
1 pkt cream cheese
Tabasco sauce to taste
1 cup natural yoghurt
pinch of salt



Peel Avicennia fruit and remove hypocotyl (brown furry lump at the base of the seed). Place in pressure cooker with small amount of water and boil at pressure for 7 minutes. Drain off liquid and mash seeds with other ingredients until smooth. Add condiments to taste.

Avicennia marina and the river mangrove, Aericanas corniculatum are excellent honey producing species. The honey is rich and aromatic and is an interesting variation from the Eucalyptus honeys.

Other food plants found in mangrove communities include Amyema spp., Auricularia polytricha, Salacia chinensis, Salicornia quinqueflora, and Suaeda australis. Refer to Cribb & Cribb for more details.

FURTHER READING

Clough, B.F. (Ed) MANGROVE ECOSYSTEMS IN AUSTRALIA Proceedings of the Australian National Mangrove Workshop, Australian Institute of Marine Science, Cape Ferguson 18-20 April 1979.

Jones W.T. THE FIELD IDENTIFICATION AND DISTRIBUTION OF MANGROVES IN EASTERN AUSTRALIA Qld Naturalist 20 : 35 - 51

Macnae W. MANGROVES IN EASTERN AND SOUTHERN AUSTRALIA Aust Journal of Botany 15 : 67 - 104

Semerink V.K. et al (1978) MANGROVES OF WESTERN AUSTRALIA Handbook No. 12 W.A. Naturalists Club (Perth)

Smith M. & Kalotas A.. BARDI PLANTS Rec West Mus 1985 12(3) : 317-359 [lists Aboriginal uses of 14 mangrove species in North-Western Australia].

Williams J.B. & Harden G.J. A FIELD GUIDE TO THE MANGROVES OF NEW SOUTH WALES [7 pages, available for \$1.00 from The University of New England, Armadale, NSW, 2351. They also have an extensive range of publications dealing with the identification of NSW flora].

Taken from the SGAP Tasmanian Region Newsletter 7(8) Dec. 87

Billardiera is in the family Pittosporaceae & there are about 6 species, all endemic to Australia. Tasmania has 2 of these species- Billardiera longiflora & B. scandens, the latter found in dry eucalypt forests mainly in the north of the state, with the common name of apple berry or apple dumplings. Billardiera longiflora is common & widespread from sea-shore to forests & mountains with moderate rainfall.

The name Billardiera is in honour of Jacques de Labillardiere, a famous French botanist who visited Australia in search of La Ferouse-longiflora indicates the long flower.

The plant climbs by twining the main stem & quite often covers other plants, as it grows several metres in good conditions.

The leaves are alternate, narrow, elliptical 1 1/2 - 4 1/2 cm long. The flowers are borne singly, greenish-yellow, long bell-shaped 1 1/2 - 2 1/2 cm long. The petals ultimately separate & become purplish. Flowering time is Oct - Jan. The subsequent green berries become a mature ovoid-oblong berry up to 2 cm long in the autumn, the floral style being retained as an appendage to the berry.

The colour of the berry- most common are shades of blue to deep purple, occasionally white. I have found white once only - on the top of Mt Dromedary many years ago.

The red form found on the coast differs slightly in the shape of leaf & berry & length of flower, & could be put as another species or subspecies when it is studied further. I have seen it at Cloudy Bay on Bruny Island & Partridge Island, where it was a lighter red & most attractive. Rodway separated the stunted alpine blue-berry from those of lower altitudes, calling it Billardiera longiflora var. alpina.

Many of our so-called berries are not true berries but this one is an exception. The seeds are immersed in the pulp, which is fleshy & spongy inside the outer skin or epicarp. This becomes one celled, containing disc-shaped seed - blackish-brown with a rough surface, usually exceeding 50 in number.

The berries are supposed to be edible but by the numbers that are still on the shrubs at the end of winter, I expect they are a last resort for hungry birds or animals.

In "Grow What Where" I find Billardiera longiflora will grow in most gardens. It does not like really heavy clay soil, very sandy & dry, nor boggy wet places. It grows in tubs & hanging baskets - the flowers may attract birds. It does not like lime.

The first time I remember seeing the red, blue & white varieties growing together was on a wall of Mrs Rodway's home at Blackmans Bay, when she was working in the herbarium at the Tasmanian Museum. The wall of her house was almost covered with a glorious show of the berries.

My red variety grows happily on the east side of our garage & the seedlings come up in my orchid pots in the shade house it helps to cover. I have grown the blue from cuttings but have not had the same success with them.

When the stems grow inside the garage, they have to be cut back - so I collect them for basket making. So far I have collected enough to make a small article.

[The following is a recent contribution to the local conservation newsletter. I hope it is of general interest. It is meant to be a little tongue-in-cheek.]

USEFUL PLANTS OF THE BEND OF ISLES

=====

Part One of an Occassional Series by Rodney BARKER

Urtica incisa

SCRUB NETTLE

IDENTIFICATION : Easy! Sprawling perennial, with leaves more lance-shaped than the introduced variety, plus the only hairs are stinging hairs.

DISTRIBUTION : Very common in South-Eastern Australia. I have only seen it growing on the banks of the Yarra, but it can grow in any damp spot, so is probably more widely distributed.

CULTIVATION : Easy to grow (but handle with gloves on). Likes some shade & does well in pots; would be worth trying inside, in a well-lit spot.

Propagation is very easy, by cuttings, layering and seed; probably root division would succeed too. Prune frequently, either to maximize the number of new shoots or to ensure stems grow long & straight (which depends on the uses you have in mind - see below).

USES : (1) AS FOOD :

"One of the best of the wild green vegetables"
Cribb & Cribb in WILD FOOD IN AUSTRALIA.

Boil young shoots and tips. Use as a vegetable or 'soup base. Also used for a tonic tea, & making beer. Here is a recipe for Nettle beer from Grass Roots # 50 (August 1985), by John Burnett :

NETTLE BEER

8 litres (2 gal) young nettles
8 litres water
14 g (1/2 oz) bruised root ginger
1.8 kg (4 lb) malt
60 g (2 oz) hops
125 g (4 oz) sarsparilla
675 g (1 1/2 lb) castor sugar
30 g (1 oz) yeast

Young nettles only should be used. Wash them well and put them into a pan with the water, ginger, malt, hops and sarsparilla. Bring to the boil and simmer for 15 minutes. Strain over sugar and stir until the sugar has dissolved. Add creamed yeast. When the beer starts to ferment, put it into bottles, cork them and tie down the corks with string.

The beer is now ready to drink, and is delicious.

(2) MEDICINALLY :

Used to treat rheumatism and gout, by applying leaves to affected parts, and as an infusion for sprains. Boiled leaves

used as a poultice. Also used as a hair restorer & a diuretic.

(3) OTHER USES :

Use as a hair rinse for glossy hair. Crush seeds for their oil, or extract dye from the roots.

Can be used for cordage & cloth of all types, by drying stems, steeping them in water until the non-fibrous matter is washed away, then separate fibres and spin.

Related species used for compost activating and as a preventative against lice (1 part nettle to 10 parts rain water - spray on relevant areas weekly).

(4) HISTORICALLY (& PERHAPS HOPEFULLY) :

Culpepper puts it under the dominance of Mars, and recommends it for bleeding in the mouth (stopping same, I presume), staying poisonous substances and as an antidote to lethargy. He finally claims that the roots can be made into an infusion with honey to open the passages of the lungs.

(5) FINAL POINTS :

Plants also look attractive & make good conversation-pieces.

Why wage war against the weeds in your garden, when it is so easy to let them grow, and then eat them!



• LETTERS •

Thanks for your note enquiring about my book on Aboriginal Bush Food. Yes - comprehensive book will come out early in 1987 (about May). It is :

Bush Food : Aboriginal Food and Medicine by Jennifer Isaacs WELDON 1987

There are approximately 280 pages and over 200 colour photographs, with information on food gathering and preparation. Six Aboriginal women from the communities who helped are - Banduk Marika, Thancoupie, Joyce Hall, Nellie Patterson, Maude Patterson and Elsie Ganbada.

The book concentrates on the foods of the centre and north of Australia, but includes tables of 300+ from all areas as well. It will aim for the general readership although scientific names are specified for the enthusiastic botanists.

Yours sincerely
Jennifer Isaacs.

We are still doing a bit of experimenting with native foods and are intending to hold another Bunya Nut Feast in February if the Bunya crop is up to expectations. Our WILD FOOD COOKBOOK is a steady seller and we have had to print another 200 copies. I have included a "Table of Contents" and an "Index to Wild Food Ingredients" this time to make it easier to find appropriate recipes. It sells now for \$5 per copy plus postage - making it \$7 posted. Sales usually increase when the Bunya Nuts come into season.

Have just tasted a very nice Midyim and Dianella Jelly made by one of our members. Dianellas were very good this year and we made quite a few jars of jam - lovely dark blue colour.

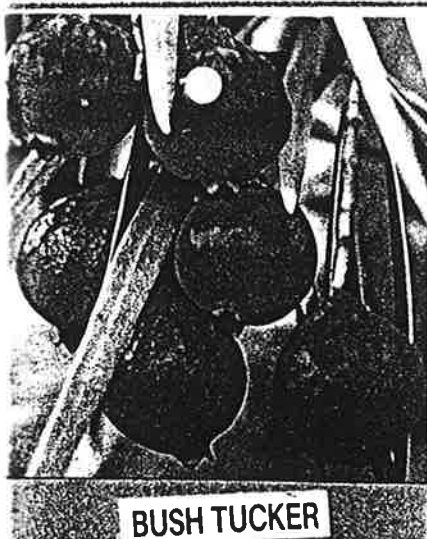
Regards,
Jan Sked
(for Pine Rivers SGAP)

FORTHCOMING PUBLICATION

Thank you for your recent letter and for your interest in my books. My plan has been to write two books on Australian edible plants, one on the introduced species ("Wild Herbs of Australia"), and a second on native foods which will be called "Wild Food Plants of Australia". It will feature 140 colour photos covering the majority of plants of south-eastern Australia. Angus & Robertson expect to publish by August, and tomorrow (27 December 1986) I fly to Adelaide and travel through southern and central Australia on my final journey in search of edible plants to photograph. The plants in the book are divided into seashore, freshwater, rainforest, open forest and arid zone species, & introductory chapters describe the Aborigines, food nutrients, cookery, conservation and the like. The book will be hardcover and the same size as my first.

I am still deeply involved in the subject, and write a regular column ("Wild Foods") for Australian Natural History Magazine, produced by the Australian Museum.

Best wishes
Tim Low.



BUSH TUCKER

QUANDONG Native Peach

Santalum acuminatum

[FREE PLUG]

Perry's Fruit & Nut Nursery, at Kangarilla Rd., 2 km east of McLAREN FLAT (SA) 5171 Tel. (08) 383 0268 offer a range of useful exotic plants. However, they also sell Quandongs growing on Strawberry Clover as a host. They can arrange transport of plants to other states. Could be worth enquiring about.



QUANDONG NATIVE PEACH

Santalum acuminatum

VERY HARDY AUSTRALIAN EVERGREEN FRUIT TREE TO 5M. NATIVE TO DRIER PARTS OF SOUTHERN AUSTRALIA. FRUIT HIGHLY PRIZED BY PIONEERS AND COUNTRY FOLK - RICH IN VITAMIN C. QUANDONG IS A ROOT PARASITE ALREADY ESTABLISHED ON A SUITABLE HOST. PLANT CAREFULLY WITH NO ROOT DISTURBANCE. DO NOT REMOVE HOST PLANT, BUT TRIM BACK IF NECESSARY. REQUIRES WELL DRAINED SOIL. WATER REGULARLY DURING THE FIRST SUMMER. APPLY 50g BLOOD & BONE IN SPRING & AUTUMN. INCREASING THEREAFTER WITH AGE OF TREE. FRUITS IN 4.5 YEARS.

7 Glory Street
Ashgrove, Qld 4060

Mr R. Barker
P.O. Box 62
Kangaroo Ground
Vic. 3097

22 June 1986

Dear Mr Barker,

Thank you for your letter, and please accept my apologies for being so slow with my reply.

Yes, I have heard of Beth Gott's work, but am not aware of similar listings for other states. It would be ideal if something of the sort could be done on a nationwide basis.

I am afraid that my "update" has to consist of a report of no further progress. Like so many research projects, this one came to a full stop as a result of termination of funds and lack of time. However, I am hopeful that the full stop will turn out in the end to be merely a semicolon - efforts are being made to obtain the means of keeping the project going. In the meantime, my computer files have been incorporated into a wider ethnohistory scheme organised by my husband, Gerry Langevad.

I enclose a printout of the data I accumulated for a sample species, and hope this will be of interest to your members. I can supply information as required, in various formats, but would probably have to make a small charge to cover computing costs. Enquiries can be directed to me at the above address.

Keep your eye on AIAS publications. If I do manage to get the project going again, I hope it will be under the auspices of the Institute.

Yours sincerely,



Barbara Langevad

GLEN LEIPER ON WILD FOODS OF QUEENSLAND

The following is a list of some of my more pleasurable or interesting bush taste sensations of recent times, for what they're worth :

Cissus opaca - a wild grape. Fruit are very dry and taste grape-like, but the swollen tuber is much more palatable, being like a milky raw potato in taste - if you can imagine that.

I planted one at home below some small rainforest shrubs and it soon climbed up and over them (4 - 5 metres tall) and sent up suckers from roots everywhere. Each of these developed a swollen potato-like tuber. For home use it is a vigorous grower, covering all around it. But the taste of the tuber is very good - almost sweet. I ate an entire tuber raw (the size of a small spud) and very much enjoyed it. Recommended.

Pothos longipes - a local rainforest vine with distinctively-shaped leaves (see "Australian Climbing Plants" by D. L. Jones), the infrequent oblong 1 cm. red fruit are sweet and juicy, not unlike the fruit of the Walking-Stick Palm (Linospadix monostachys) in taste, shape and colour.

Arytera lautereriana - a local rainforest tree with highly attractive foliage. It produces masses of cherry-sized orange fruit enclosed in a thin case which splits open. It is a native tamarind and is extremely juicy, but also very sour. Don't stop after one, but savour a few. Soon the sourness is no longer obvious and the fruit can be relished with great delight. But be warned - I suffered a few mouth ulcers

after a recent binge! One of my favourites nevertheless.

Rhodomyrtus trineura - a small rainforest plant of areas north of Bundaberg. My specimen was bought some years ago from a local specialist native plant nursery as Rhodamnia trinervia but is definitely not. The small (1 - 5 cm.) white fruit are pleasantly juicy and slightly sweet also.

Trachymene incisa - a native carrot found in sandy coastal soils in abundance. The white tuber is carrot-like in appearance and turnip-like in taste, to a certain degree. Eaten raw it is excellent and cooked (although I haven't done so) should be a good quality vegetable. Highly recommended.

Alectryon tomentosus - a local rainforest tree with distinctive compound leaves with toothed margins. It produces masses of 1 cm. diameter fruit enclosed in cases which split open revealing a bright-red aril which encloses a black seed. The aril can be quite juicy and sugary to taste, but tends to dry your mouth out. A sucking insect relishes the fruits (the seeds I think), so quite often the fruit is shed early because of the damage done. All other Alectryons I've tried have tasted identical (A. connatus, A. subcinereus). I would suspect A. forsythii (N.S.W.), A. subdentatus and A. coriaceus to be similar.

Alpinia caerulea - a wild ginger with 1 cm. diameter blue fruits. By lightly squeezing the fruit, the blue case cracks and is easily removed. Pop the whole remaining fruit in your mouth and break it up with your

GLEN LEIPER ON WILD FOODS OF QUEENSLAND

teeth and tongue. It's full of black seeds; don't crunch them up, but suck it and get the taste of grape skins. Quite tasty. Spit out the seeds and pulp. The newer swollen roots are lightly gingery to taste and substitute well in ginger-nut biscuit recipes, I've found.

Eremocitrus glauca - desert lime. A prickly dense shrub with attractively scented citrus flowers, followed by masses of 1 cm diameter yellow fruit which are sour but quite pleasant to eat or made into a drink. Sown seed germinates well, but seedling tend to struggle on for years I've found. I have mine in a large pot - I'm not game to plant it out after seeing how vigorously it suckers out west in its natural habitat!

Eustrephus latifolius - Wombat Berry. A common wiry vine of local Eucalypt forests. The plant forms numerous tuber-like swellings on its roots which are very much like raw potato in taste. Quite a good food.

Exocarpos latifolius - Bush Cherry. A rainforest plant parasitic on other trees roots. It forms a small tree and can be grown at home I've found, although very slowly. The seed is supported by a red, very swollen stem, which is juicy and sugary & is a favourite. I've never found more than 1/2 dozen ripe fruit on any tree at any one time unfortunately.

Freycinetia scandens - a vigorous rainforest vine with attractive, soft, Pandanus-like foliage. It produces clusters of 2-4 orange 8 cm pineapple-shaped fruits which when ripe

Alpinia
caerulea



are soft & squishy. Taste is very bland & watery and spoilt by the countless tiny woody seeds.

Hibiscus diversifolius and H. heterophyllus - both have tasty raw prickly leaves which for some reason, children take to quite readily once the prickly sensation is overcome in their mouths. The prickles are easily crushed by the teeth. The leaves would be a suitable substitute for a cooked leafy vegetable such as spinach I would think. The flowers, flower buds and seeds are also edible. Flowers are rarely free of insects so I usually give them a wide berth!

Podocarpus elatus - Brown Pine. A local rainforest tree that is fairly slow growing to start with. It produces masses of fruit when given T.L.C. These fruit are similar in shape to the Exocarpos, with the seed externally attached. The swollen stem is the edible part, being very juicy & sometimes up to 4 cm in diameter, but very oily and slippery in nature. Not a favourite of mine, but still quite tasty anyway.

I'll finish there as I can hear my belly rumbling - I can take a hint especially when food is involved.

Yours gastronomically
Glenn Leiper

U P C O M I N G E V E N T S

Dianellas: 7:30 pm Tuesday 2/02/88
with R.J.F. Henderson, Western Suburbs/Oxley Branch (QLD), cnr.
Oxley & Sherwood Rd.s, Sherwood

Wildfoods: Saturday 6/02/88
organised through the Brisbane Forest Park, PO BOX 168, North
Quay QLD 4002. Enquiries 300-4855. Their publicity reads:
"Living off the land is a romantic notion. Have you ever wondered
which plants in the bush are edible or how to prepare a meal of
wildfoods? Spend a day with wildfood experts, Dr and Mrs Cribb,
looking at the methods of identification, preparation and cooking
of the bush delights growing in the forest.
WHERE: BFP headquarters, The Gap
COST: \$20.00"

Edible Plants: 8 pm Wednesday 24/02/88
Foothills (VIC), Knox Park Primary School, Barview Crt.,
Knoxfield (Melway 73:C3)

Rain Forest Plants for Melbourne: 8 pm Tuesday 15/03/88
with David Cameron, Waverley SGAP (VIC), Waverley Youth Centre
(next to library), Miller Cres., Mt. Waverley (melway 70:E1).

Identification of Rainforest Plants: 16-20 April 1988
Lamington Natural History Field Studies Centre, Binna Burra,
Lamington National Park.
A weekend course of lectures, laboratory sessions and field work,
followed by an optional 3 days of excursions. The Field Study
Centre is situated in the Lamington National Park, the most
extensive and best preserved example of subtropical rainforest in
Australia, & the northernmost area of cool temperate rainforest.
It is 120 km from Brisbane, has a wide range of rainforest types
& associations, and is excellent for walking. An additional
feature of this course will be an option to study mushrooms and
other fungi with Dr. Alex Wood (University of NSW).

Course fee is \$120 for the weekend, or \$300 for the 5 days,
including accomodation & all meals. Camping and luxury
accomodation at the Binna Burra Guesthouse can also be arranged.
Enrolments should be made by January 1988 to UNE Continuing
Education, North Coast Regional Office, PO BOX 1570, Coffs
Harbour, NSW, 2450.

Port Curtis Plants - Progress: 18-25 September 1988
The SGAP (QLD) Regional Conference, organised by the Gladstone
Branch for the Tanyalla Conference Centre, Canoe Point Rd, Tannum
Sands (20 km SE of Gladstone).

At least 2 of the talks will interest AFPSG members. These are:
Australian Wild Relatives of Agronomic Crops - Peter Lawrence
The Useful Plants Project for the new Native Botanic Gardens,
Rockhampton - Rockhampton Branch SGAP.

PLEASE KEEP ME INFORMED OF ANY OTHER EVENTS OF INTEREST TO OUR
MEMBERS !

FLORA OF AUSTRALIA VOLS. 45: HYDATELLACEAE TO LILIACEAE AND 46: IRIDACEAE TO DIOSCOREACEAE

These volumes, published by the Australian Publishing Service, Canberra in 1987 (Vol. 45, \$54.95 hard cover, posted) and in 1986 (Vol. 46, \$34.95) are the first volumes in the Flora to deal with monocots. They should be of great interest to students of the Tasmanian flora, since about one-third of the pages of Vol. 45 and two-thirds of Vol. 46 contain full descriptions of plants that grow in Tasmania, or have relevant keys, illustrations or distribution maps.

The main family of interest in Vol. 45 is Liliaceae, the lilies. It also contains eight small families such as Musaceae (bananas) and Zingiberaceae (gingers) that are mainly tropical and not found in Tasmania, as well as the following three small families:-

Hydatellaceae: A small family related to Centrolepidaceae; Tasmanian species are Hydatella filamentosa, endemic and a highland species and Trithuria submersa, a swamp plant.

Typhaceae: Bulrushes or cumbungi, with two natives Typha domingensis and T. orientalis plus the introduced T. latifolia.

Haemodoraceae: The kangaroo paws and their allies, including one Tasmanian endemic species, Haemodorum distichophyllum, found in the SW.

Liliaceae is the largest family in this volume, and like Haemodoraceae has considerable interest for the gardener. Tasmania has about 37 native species and there are four naturalised species.

Native and also endemic: All are from highland or wet areas.

Astelia alpina var. alpina - pineapple grass

Milligania stylosa, lindoniana, longifolia, densiflora, johnstonii

Blandfordia punicea - Christmas bells

Campynema lineare

Native, also occurring in other States:

Drymophila cyanocarpa - turquoise berry

Hypoxis hygrometrica, glabella var. glabella, vaginata - star grasses, yellow stars

Dianella revoluta, coerulea, tasmanica - flax lilies

Thelionema (= Stypandra) caespitosum - tufted blue-lily

Bulbine bulbosa, glauca, semibarbata - leek-lilies

Herpolirion novae-zelandiae - sky-lily

Laxmannia orientalis - paper or wire lily

Sowerbaea juncea - rush or vanilla lily

Caesia parviflora, alpina, calliantha, corymbosa var. corymbosa - grass lilies

Chamaescilla corymbosa - blue star

Tricoryne elatior - yellow rush-lily



Flora of Australia—
Volume 45
Hydatellaceae to Liliaceae

Thysanotus patersonii - twining fringe-lily
Arthropodium milleflorum, minus - vanilla lilies
Dichopogon strictus - chocolate lily
Wurmbea (= Anguillaria) dioica, latifolia, uniflora - early
nancy
Burchardia umbellata - milkmaids

The two families of interest in Vol. 46 are Iridaceae and Xanthorrhoeaceae. In the volume there are also three small families that are tropical and not represented in Tasmania, as well as the tropical to temperate families Smilacaceae (includes Smilax) and Dioscoreaceae (yams).

Iridaceae: Five native and 17 introduced species are described.

Isophysis tasmanica - endemic
Libertia pulchella - ranges from Papua-New Guinea down eastern
Australia to NZ

Patersonia occidentalis, P. fragilis - swamp iris

Diplarrena moraea, D. latifolia - white iris, butterfly flag; the
second species is endemic

Xanthorrhoeaceae This family includes both saggos and grass trees. The family name (of 8 vowels and 8 consonants!) means "yellow flow" and refers to the resins from the leaf bases that make up much of the trunks of the grass tree. Tasmanian species described are:-

Lomandra nana, L. longifolia (saggs)

Xanthorrhoea bracteata, X. arenaria (endemic; newly separated as a
species; from the NE and E), X. australis.

The distribution maps don't show any Xanthorrhoea species on Flinders Island. Perhaps specimens are too awkward to collect and send to herbaria.

The distribution maps are also interesting in showing several species that occur down the eastern side of mainland Australia, starting in Queensland and continuing to Victoria, but stopping short of crossing Bass Strait. Examples are:-

Philydrum lanuginosum in Fam. Philydraceae; Thysanotus tuberosus (a fringe lily); Lomandra multiflora (a sagg); and in the family Smilacaceae, the forest climbers Smilax australis, Ripogonum album, Eustrephus latifolius, and Geitonoplesium cymosum.

Stypantra glauca (nodding blue lily) occurs in all southern mainland States but stops short of crossing Bass Strait.

Perhaps we should search in the wetter forest areas of the East Coast and on Flinders Island to see if these species exist here!

J.A. CARPENTER

Earthworms

As variety is the spice of life, I thought you would like to see the following extract from a book entitled ENTERTAINING WITH INSECTS by Ronald L. Taylor & Barbara J. Carter Woodbridge Press (Calif.) 1976. The recipe was written by Robert J. Smith and I have copied it from a CSIRO publication called "Earthworms for Gardeners and Fishermen", Discovering Soils No. 5 (no author listed).

Cleaning and Preparation

The first job is to clean the worms inside and out. Wash adhering materials from them and place them in moist cornmeal or flour for 24 hours. This will enable them to be purged of all remaining parts of their past food.

Remove the mash and spread them on waxed paper. Remove any dead ones, that is, any that do not move themselves on being touched. Place the live worms in a colander and rinse vigorously in cold water. If they are handled too hesitantly they will crawl through the holes. Tip them out onto paper toweling or a teatowel and pat dry. They are now ready for use or they can be frozen for use later.

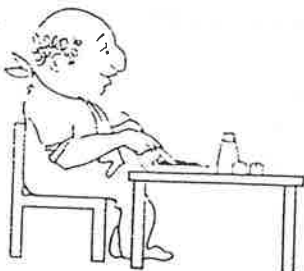
The rinsed worms are generally boiled before inclusion in any recipe. It seems best to boil them for 10 minutes in each of two or three separate lots of water. They may be used as a flour, whole or chopped. Flour is made by drying the earthworms in an oven at 95°C for 15 to 30 minutes and grinding them in a blender.

Good eating too!!

Earthworm Omelette

6 eggs	¼ cup celery, sliced
1/3 cup milk	1/3 cup green pepper, sliced
¼ cup parsley	¼ small onion, chopped
½ teaspoon seasoned salt	1/3 cup cheese, shredded
½ teaspoon pepper	1/3 cup mushroom, sliced (optional)
1 drop garlic extract	1 drop hot pepper sauce
¾ to 1 cup fresh earthworms	1 dash Worcestershire sauce

Beat together eggs, milk, parsley, salt, pepper, and garlic. Place mixture in a medium-hot omelette pan. When almost done to taste, add earthworms, celery, green pepper, onion, cheese and mushrooms. Finish cooking. Add pepper sauce and Worcestershire sauce. Serve immediately.



Further Reading

Biology of Earthworms. C. A. Edwards and J. R. Lofty, 1972 (Chapman & Hall)

The World of the Soil. E. J. Russell, 1959 (Collins/Readers Union)

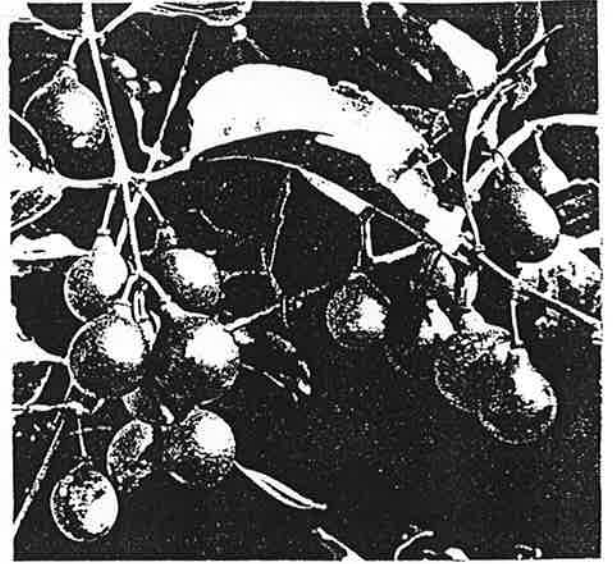
Salacia chinensis

Qld (north)

Aug-Oct

The bright orange-red showy fruits of this species have tough, rubbery skin and opaque pulp surrounding a single seed. They grow to 3.5 cm long, 3 cm across and are delicious to eat. The small, greenish flowers are carried singly or in bunches of three to six from the leaf axils. The dark-green, oval leaves are opposite, leathery, 5-10 cm long and carried on petioles about 1.5 cm long. The species is a vigorous woody scrambler of coastal districts and is often found among mangroves. Formerly confused with *S. prinoides*, an exotic species.

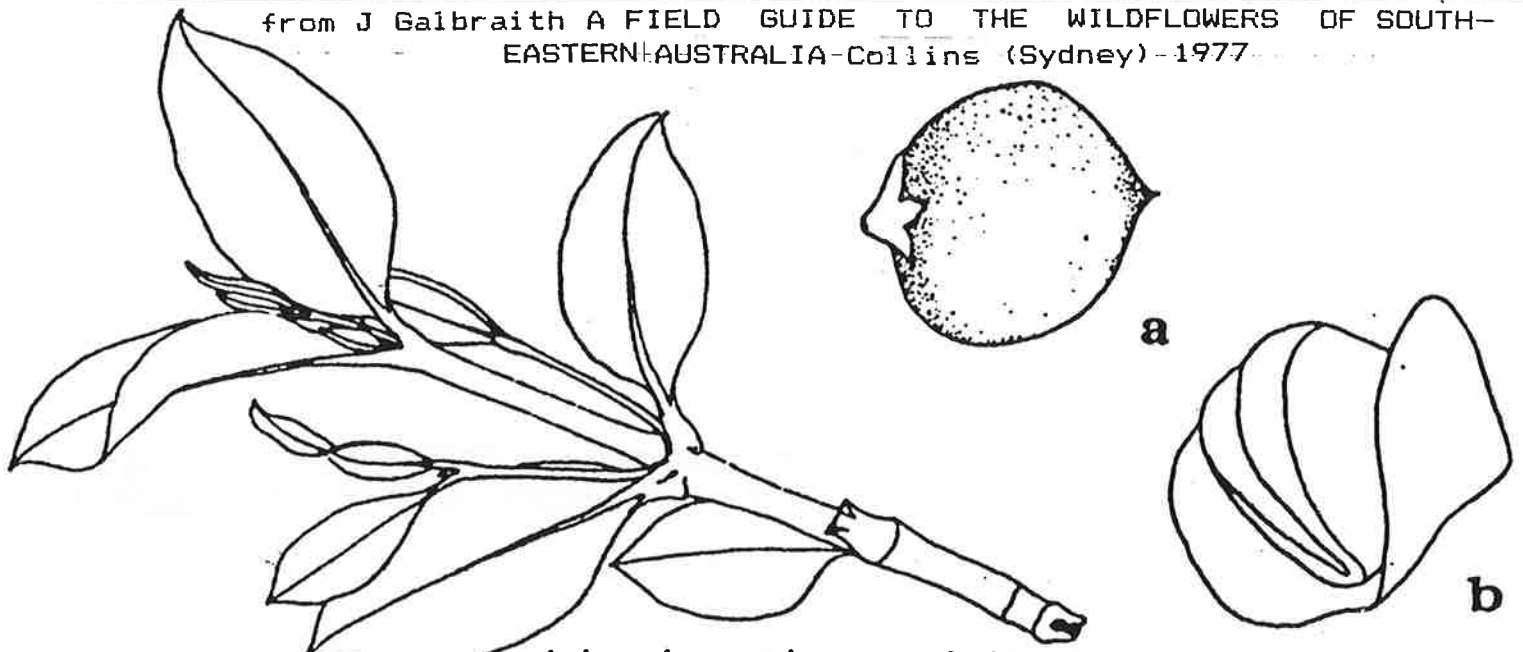
Celastraceae



from DL Jones & B Gray AUSTRALIAN CLIMBING PLANTS Reed (Sydney) 1977

If undeliverable, please return to:
R. BARKER P.O. Box 62,
Kangaroo Ground VIC. 3097

from J Galbraith A FIELD GUIDE TO THE WILDFLOWERS OF SOUTH-EASTERN AUSTRALIA-Collins (Sydney)-1977



Avicennia marina: a, fruit;
b, cotyledons unfolding