

# Tropical and subtropical plants for the southern Sydney basin

By Garry Daly

## Introduction

Within the Sydney basin (from Newcastle south to just north of Batemans Bay and west to the Great Dividing Range) there is a wide range of climates from warm coastal areas such as Nobbies Point (near Newcastle) and the Sydney CBD to the montane areas of the Blue Mountains. There is also a wide range of soil types from fertile red podsols derived from volcanic rock to infertile soils derived from sandstones. Given this range of climates and soils, it is interesting to know what people can grow in their particular area as a guide to what might be achievable on your own lot.

In 1985, we bought 40 ha of land in the Shoalhaven, some 15 km north west of Nowra. At that time about 1/3 of the land was pasture (Figures 1 and 2). Significant features of our place are two streams, the soils, climate, rainfall and being connected to the Illawarra escarpment. The lot varies in altitude from 100-400 m AHD and has rolling hills on the Berry Formation. The soils are deep and fertile, being derived from volcanic influenced rock. There are blocks of Budgong sandstone on the upper slopes that have fallen from the escarpment (Hazelton 1993). The area receives about 1100mm rain annually.

The original native vegetation has been disturbed from previous clearing for agriculture (dairy). Much of the forest is regrowth and around 80 years old. A consequence of clearing it is that hollow-bearing trees are uncommon features of the forest. The largest remnant trees are Turpentine *Syncarpia glomulifera* subsp. *glomulifera* and Illawarra Blue Gum Eucalyptus *saligna* x *botryoides*. The forest beside Tapitallee Creek has subtropical species such as Moreton Bay Fig *Ficus macrophylla*. Beside Bangalee Creek there are some fine specimens of the Small-leaved Fig *F. obliqua* and in the paddock on the adjoining property is a large remnant Superb Fig *F. superba* var. *henneana*. Beside Tapitallee and Bangalee Creek there are stands of Ironwood *Backhousia myrtifolia* with Illawarra Blue Gums as emergents. We are fortunate to have a 20 ha reserve behind our place that supports primary rainforest, including a few Bangalow Palms *Archontophoenix cunninghamiana*.

As the Tropical Garden Society of Sydney deals with this defined group of plants I will only list species that I have grown that have a natural distribution within latitudes north of the Sydney Basin. Although the tropics is defined as latitudes between 23°26' north and south of the equator this account includes subtropical and tropical species. Hence species that have a wide distribution that occur on our place but also grow in the tropics such as Pencil Cedar *Polyscias murrayi*, Celery Wood *Polyscias elegans*, Native Tamarind *Diploglottis australis*, Moreton Bay Fig *Ficus macrophylla*, Superb Fig, Flame Tree *Brachychiton acerifolius* etc are not listed in Table 1 but are tropical and have attributes such as large leaves and fruit.

## The revegetation plan and problems with wind

My interest in palms and rainforest plants prompted considerable effort in establishing these groups. Initial plantings focussed on various species of Cabbage Palm (*Livistona* spp. and other fan leaved species) and establishing stands of Bangalows. The climate at our place in the 1980s and 1990s was vastly different to what we experience today. Katabatic winds surged down from the western escarpment for 4-6 months of the year damaging and killing plants, especially those sited on the ridge. Although frosts are rare (one or two light ones in 30 years) the night time temperature is usually a few degrees lower than areas closer to the coast. Except for extreme heat in summer the climate has become more benign, presumably a result of global warming.

## Information on tropical plants

One of the problems with attempting to grow tropical plants is getting information about the species and then accessing stock. In the 1980s only enthusiasts knew about or grew tropical or even subtropical rainforest plants and there were very few publications on the subject. I remember when *Trees and Shrubs*

*in Rainforests of New South Wales and Southern Queensland* was published in 1984 (Williams *et al.* 1984) and the impact that guide had on my knowledge. For once there was a field key to identify rainforest plants in NSW based on leaf morphology. A few years later *Ornamental Rainforest Plants in Australia* (Jones 1986) was published and this text has been well fingered over the years. In particular, the colour plates gave the reader wonderful images of plants, many of which had never been widely seen. Apart from technical papers there was little published on the species and cultivation of palms. In those days, the only book on palms I recall being available was *Palms of the World* (McCurrach 1960) with *Palms* (Blomberry and Rodd 1982) being published some 22 years later.

How things have progressed, now with the internet and databases such as the CSIRO Australian tropical rainforest plants (<http://keys.trin.org.au:8080/key-server/data/0e0f0504-0103-430d-8004-060d07080d04/media/Html/index.html>) and the online palm encyclopaedia ([http://www.palmpedia.net/wiki/Main\\_Page](http://www.palmpedia.net/wiki/Main_Page)) and Palms and Cycads websites ([http://www.pacsoa.org.au/wiki/Main\\_Page](http://www.pacsoa.org.au/wiki/Main_Page)) we can quickly access a wealth of information on so many interesting plants. There are still relatively few nurseries that grow a wide range of tropical or even subtropical species but the keen collector can now access hundreds more species that simply were not available 30 years ago.

### **My experiences with growing subtropical and tropical plants in a temperate area**

The ability of tropical plants to survive in temperate zones is often tested by botanic institutions and enthusiasts. There is a general rule of thumb that species from higher altitudes tolerate lower temperatures and hence can grow at higher latitudes than species originating from the lowland tropics. The reason for this tolerance is that ambient temperatures fall at a steady rate of 5-10 °C/km depending on saturation rate ([https://en.wikipedia.org/wiki/Lapse\\_rate](https://en.wikipedia.org/wiki/Lapse_rate)).

One complication with this general rule is that tropical plants often have narrow diurnal and seasonal variations in temperatures and humidity (partially a result of high soil moisture), hence a montane species may survive low temperatures but will succumb to prolonged high temperatures and/or drying. This is especially the case for species originating from cloud forests where fog/mist drift in almost every night.

Given these limitations at our place, we can generally grow species from the Queensland wet tropics that have a natural range to or above 1000 m AHD. This is a good rule of thumb but of course some lower altitude species do well as they have a wide physiological tolerance and some plants from the cloud forests cannot cut the prolonged summer extreme heat. Knowing the conditions where a plant naturally grows is vital to choosing a suitable location on your land to site that specimen. I try to plant cold sensitive species on the north facing slope so they are exposed to winter sun, whereas moisture loving montane species are grown beside creeks and seepages.

### **Stand-out species**

After 30 years of trial I present a list of some of the more interesting tropical and subtropical species that I have grown that have performed well in our climate (Table 1). I have grouped plants into categories such as palms, cycads and rainforest trees, shrubs and exotic species. The stated size of plants should be treated as a guide as the height will vary with particular conditions. People living in suburbia with limited space, cannot expect huge figs or booyongs to persist in the long term. Most of these plants that I listed have one or more of the following features that tropical enthusiasts like i.e. large leaves, red new growth, edible and / or colourful fruit.

### **Climate change and possible extra tropical species that may be grown**

Australia's annual mean temperatures have increased by about 1°C since 1910, with significant regional variations (CSIRO 2016). This increase in annual mean temperatures has impacted on the number of plants that can grow in the Sydney bioregion. CSIRO projections indicate that by 2050, average temperatures in Australia will rise by about another 1°C, with average summer temperatures likely to be at least 2-3°C

warmer and summer rainfall to increase by about 50% (CSIRO and BOM 2007; Pitman and Perkins 2008, DECC 2010). The change has already kicked in as suggested by recent records. In 2017, Nowra recorded the hottest summer and wettest March.

With these changes in mind I keep experimenting with tropical species that I know are growing in nearby locations. For example, Papaya *Carica papaya* now grows and fruits in Nowra! I believe that this was not possible just a few years ago. I have tried Solitaire Palms *Ptychosperma elegans* and Brazilian Fern-tree *Schizolobium parahyba* several times but failed, yet they grow and fruit in Wollongong just 50 km north of here. I have also tried *Trema orientalis* but they grew for a few years then died.

### **The value of the arboretum**

As a member of Landcare I promote the use of local species for revegetation, so the action of growing non-endemic plants is at odds with this objective. Thirty hectares of our property is gazetted by title under a voluntary conservation agreement (VCA) (see Figure 2) and only endemic species are used for revegetation within this area. From the list of local species, I grow mainly rainforest trees that provide food resources for animals such as pigeons and flying foxes i.e. figs and laurels. Fortunately, many subtropical rainforest species have their limit near our place and these are used extensively for revegetation. The advantage of having this area secured under a VCA is that work done in this area will be preserved under a prescriptive management agreement registered to the land's title in perpetuity.

Ex-situ conservation should be an important component for anyone who manages land in a world where species extinctions are accelerating from clearing (Dransfield and Beentje 1995) and human induced climate change is altering the suitability of plants to survive in their natural environment. For this reason, there is a bias in planting rare and threatened species.

Field days are occasionally held where Landcare groups can see the arboretum and learn about the revegetation program and species selected for the various microhabitat zones, particularly in relation to the provision of food for native animals. As the forest matures seed and seedlings are given to neighbours and friends so that the resource is spread around.

## References

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[https://en.wikipedia.org/wiki/Sydney\\_Basin](https://en.wikipedia.org/wiki/Sydney_Basin)

**Table 1. Highly ornamental species of subtropical-tropical plant growing at Nowra NSW**

Note: many more species could be listed and more will be added in the future as trials continue.

Species	Origin	Height	Notes
<b>Palms</b>			
<i>Archontophoenix maxima</i>	FNQ	15 m	Slow, swollen base
<i>Archontophoenix purpurea</i>	FNQ	15 m	Slow, purple crownshaft
<i>Beccariophoenix alfredii</i>	Madagascar	15 m	Large tree
<i>Burretio kentia hapala</i>	New Caledonia	10 m	Slow
<i>Burretio kentia vieillardii</i>	New Caledonia	10 m	Slow
<i>Caryota ochlandra</i>	China	15 m	Fast, fishtail leaf
<i>Ceroxylon species</i>	S. America	35 m	Slow
<i>Chamaedorea adscendens</i>	Central America	2 m	Thick grey-blue leaves
<i>Chamaedorea arenbergiana</i>	Central America	4 m	Corn-like fruit clusters
<i>Chamaedorea benziei</i>	Mexico	5 m	Robust solitary trunk, rare
<i>Chamaedorea brachypoda</i>	Guatemala	0.5 m	Clumping, undivided leaves
<i>Chamaedorea costaricana</i>	Costa Rica	6 m	Clumping, divided leaved
<i>Chamaedorea elatior</i>	S. America	4 m	Climbing, unarmed palm
<i>Chamaedorea geonomiformis</i>	South + Central America	1 m	Undivided leaves
<i>Chamaedorea glaucifolia</i>	Mexico	3 m	Fine bluish leaflets
<i>Chamaedorea hooperiana</i>	Mexico	2 m	Clumping pinnate leaf palm
<i>Chamaedorea metallica</i>	Mexico	2 m	Undivided leaves
<i>Chamaedorea microspadix</i>	Mexico	4 m	Orange fruit, clumping
<i>Chamaedorea stolonifera</i>	Mexico	1 m	Clumping, undivided leaves
<i>Chamaedorea woodsoniana</i>	South + Central America	3 m	Solitary thick stem
<i>Chambeyronia lepidota</i>	New Caledonia	6 m	Slow - Red new leaf
<i>Chambeyronia macrocarpa</i>	New Caledonia	6 m	Red new leaf (some)
<i>Dypsis baronii</i>	Madagascar	5 m	Hardy, clumping palm
<i>Dypsis decaryi</i>	Madagascar	10 m	Sun hardy, fast growing
<i>Euterpe edulis</i>	S. America	6 m	Fine leaflets
<i>Kentiopsis oliviformis</i>	New Caledonia	6 m	Slow
<i>Kentiopsis pyriformis</i>	New Caledonia	6 m	Slow
<i>Laccospadix australasica</i>	FNQ	4 m	Red new leaves (some)
<i>Linospadix monostachya</i>	NSW	3 m	Red, edible fruit

Species	Origin	Height	Notes
<i>Livistona decora</i>	QLD	15 m	Fast growing, fine leaflets
<i>Lytocaryum weddellianum</i>	S. America	3 m	Solitary fine leaflets
<i>Marojejya insignis</i>	Madagascar	5 m	Huge undivided leaves
<i>Oraniopsis appendiculata</i>	FNQ	5 m	Slow but stately
<i>Ravenea glauca</i>	Madagascar	3 m	Graceful leaves
<i>Rhapis excelsa</i>	China	3 m	Clumping, unarmed palmate leaf
<i>Rhapis humilis</i>	China	3 m	Clumping, unarmed palmate leaf
<b>Australian Cycads</b>			
<i>Bowenia spp.</i>	FNQ	1 m	Large leaves
<i>Lepidozamia peroffskyana</i>	Northern NSW	Shrub	Slow, red fruit
<b>Australian Rainforest Trees &amp; Shrubs</b>			
<i>Aceratium ferrugineum</i>	FNQ	5 m	Red fruit
<i>Acronychia acidula</i>	FNQ	20 m	Large leaves, pigeons eat fruit
<i>Agathis species</i>	FNQ	35m	Statement tree
<i>Akania bidwillii</i>	Northern NSW	8 m	Large leaves
<i>Aleurites species</i>	FNQ	15 m	Large leaves
<i>Alloxylon wickhamii</i>	FNQ	15 m	Red flowers
<i>Alpinia caerulea/red form</i>	FNQ	1 m	Red under leaves, blue fruit
<i>Anopterus macleayanus</i>	Northern NSW	6 m	Leaves in whorls
<i>Argyrodendron sp. Stewart Creek</i>	FNQ	25 m	Large palmate leaves, dusty red new growth
<i>Athertonia diversifolia</i>	FNQ	15 m	Blue fruit, nuts edible
<i>Banksia aquilonia</i>	FNQ	10 m	Fine narrow leaves, rusty new growth
<i>Banksia plagiocarpa</i>	FNQ	5 m	Rusty new growth
<i>Bleasdalea bleasdalei</i>	FNQ	5 m	Pink fruit
<i>Bosistoa pentacocca</i>	Northern NSW	10 m	Red new growth
<i>Brachychiton bidwillii</i>	Southern QLD	2 m	Red flowers
<i>Brachychiton discolor</i>	Northern NSW	20 m	Large pink flowers
<i>Breynia sp. Iron Range</i>	FNQ	3 m	Reddish leaves
<i>Buckinghamia celsissima</i>	FNQ	10 m	Off white flowers
<i>Callicarpa pedunculata</i>	Northern NSW	2 m	Purple clusters of fruit
<i>Cardwellia sublimis</i>	FNQ	15 m	Red new growth

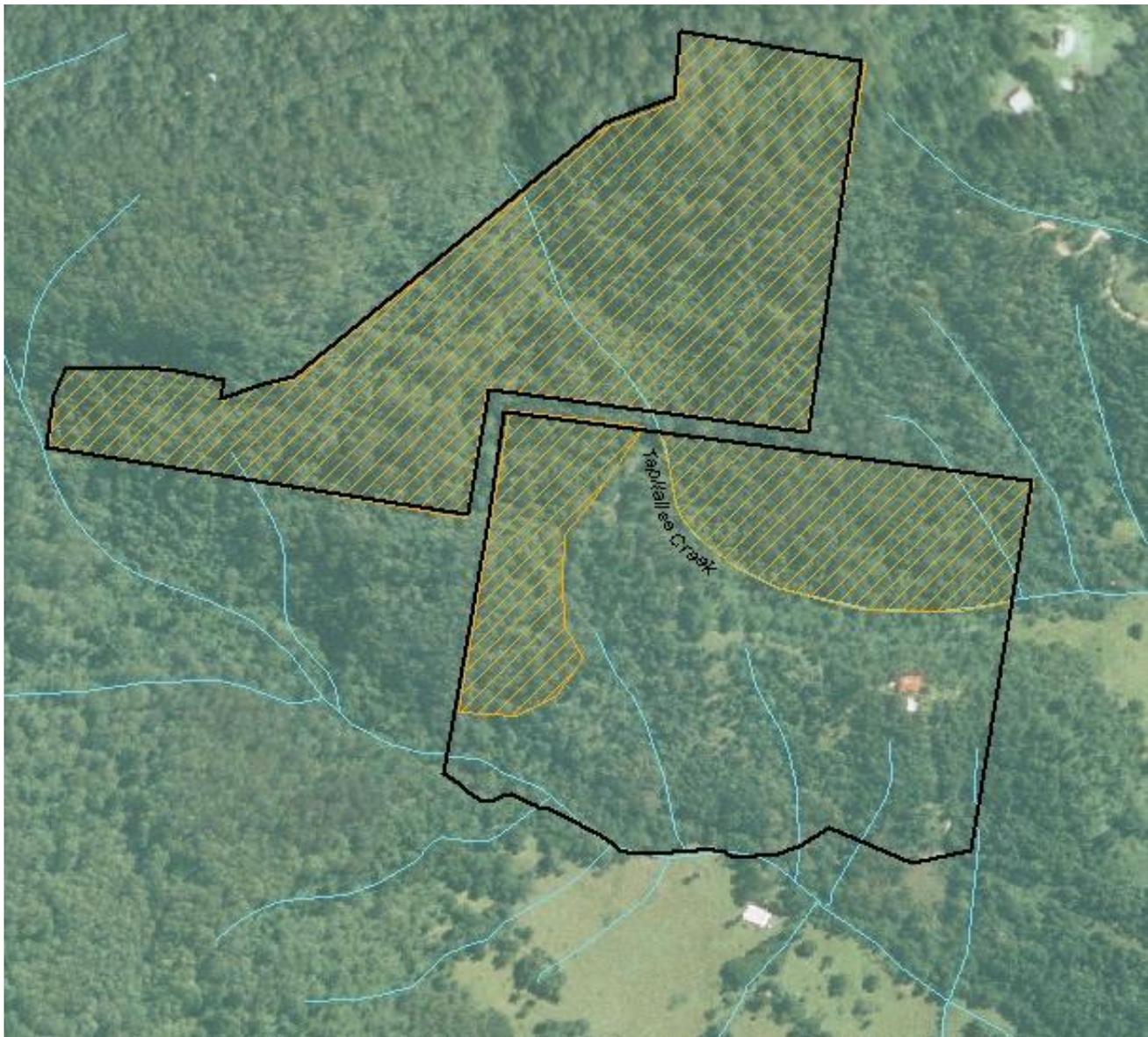
Species	Origin	Height	Notes
<i>Cassia sp.</i> Paluma Range	FNQ	15 m	Showy yellow flowers
<i>Cerbera inflata</i>	FNQ	6 m	Very large blue fruit
<i>Citrus australasica</i>	Northern NSW	4 m	Edible fruit
<i>Cryptocarya laevigata var. tropicum</i>	FNQ	3 m	Large orange fruit
<i>Cordyline spp</i>	Northern NSW	3 m	Large leaves
<i>Cupaniopsis newmanii</i>	Northern NSW	6 m	Red new growth
<i>Curculigo capitulata</i>	FNQ	0.3 m	Large leaves
<i>Curcuma australasica</i>	FNQ	0.3 m	Large leaves, pink flowers
<i>Cyathea brownii</i>	Norfolk Island	15 m	Huge fronds
<i>Davidsonia species</i>	Northern NSW/QLD	5 m	Large leaves, purple edible fruit
<i>Diploglottis bernieana</i>	FNQ	10 m	Huge leaves
<i>Diploglottis campbellii</i>	NSW	6 m	Red edible fruit
<i>Elaeocarpus bancroftii</i>	FNQ	15 m	Large showy flowers
<i>Elaeocarpus eumundi</i>	Northern NSW	15 m	Bronze new growth
<i>Elaeocarpus affin. ferruginiflorus</i>	FNQ	4 m	Orange new growth
<i>Elaeocarpus angustifolius</i>	Northern NSW/QLD	30 m	Large blue fruit, flowers attract birds
<i>Eupomatia bennettii</i>	Northern NSW	0.6 m	Large primitive flower
<i>Ficus rubiginosa - Little Ruby</i>	Cultivar	2 m	Dwarf cultivar
<i>Ficus copiosa</i>	FNQ	6 m	Large leaves
<i>Ficus crassipes</i>	FNQ	30 m	Large banana shaped fruit
<i>Ficus dammaropsis</i>	PNG	5 m	Huge leaves
<i>Ficus destruens</i>	FNQ	30 m	Leaves brown underneath
<i>Ficus pleurocarpa</i>	FNQ	30 m	Large leaves and fruit
<i>Ficus watkinsiana</i>	Northern NSW/QLD	30 m	Large fruit attract pigeons and bats
<i>Flindersia spp</i>	NSW QLD	30 m	Cream flowers
<i>Geissois biagiana</i>	FNQ	20 m	Red new growth
<i>Grevillea robusta</i>	Northern NSW	25 m	Orange flowers
<i>Graptophyllum ilicifolium</i>	Eungella, QLD	2 m	Rare, magenta flowers
<i>Hakea trineura</i>	Northern NSW	5 m	Burgundy flowers
<i>Hedraianthera porphyropetala</i>	Northern NSW	2 m	Interesting little flowers
<i>Helmholtzia glaberrima</i>	Northern NSW	1 m	Large strap leaves

Species	Origin	Height	Notes
<i>Hibiscus spp</i>	Northern NSW	4 m	Colourful flowers
<i>Hicksbeachia pilosa</i>	FNQ	4 m	Huge leaves
<i>Lasjia grandis</i>	FNQ	5 m	Leaves in whorls
<i>Lepiderema hirsuta</i>	FNQ		Pink new growth, pinnate leaves
<i>Lepiderema largiflorens</i>	FNQ	8 m	Flowers and fruit from stem
<i>Lepiderema pulchella</i>	Northern NSW	4 m	White to pink new growth
<i>Litsea bindoniana</i>	FNQ	20 m	Large reddish new leaves
<i>Lomandra hystrix</i>	Northern NSW	0.3 m	Orange seed
<i>Lomatia arborescens</i>	FNQ	20 m	Quick growing
<i>Neorites kevedianus</i>	FNQ	20 m	Fishtailed red new leaves
<i>Nothofagus moorei</i>	Northern NSW	20 m	Bronze new growth
<i>Orites excelsa</i>	Northern NSW	20 m	Perfumed spring flowers
<i>Owenia cepiodora</i>	Northern NSW	10 m	Rare, red fruit, pinnate leaves
<i>Pandanus forsteri</i>	Lord Howe Is	10 m	No spines. Stilt roots
<i>Pleiogynium timorense</i>	QLD	10 m	Large purple fruit
<i>Peripentadenia mearsii</i>	FNQ	15 m	Pink fruit
<i>Phyllanthus cuscutiflorus</i>	FNQ	1 m	Interesting flowers and fruit
<i>Pilidiostigma glabrum</i>	Northern NSW	3 m	Dense shrub with white flowers
<i>Sundacarpus amara</i>	FNQ	15 m	Long strap leaves
<i>Prumnopitys ladei</i>	FNQ	15 m	Interesting foliage
<i>Remusatia vivipara</i>	FNQ	0.2 m	Large leaf, deciduous
<i>Rhododendron lochiai</i>	FNQ	0.6 m	Red flowers
<i>Sarcopteryx martyana</i>	FNQ	5 m	Compound leaves red new growth
<i>Sterculia quadrifida</i>	Northern NSW	10 m	Edible fruit
<i>Stockwellia quadrifida</i>	FNQ	30 m	Huge tree with spreading roots
<i>Syzygium boonjee</i>	FNQ	4 m	Large pink /white fruit
<i>Syzygium canicortex</i>	FNQ	10 m	Copper new growth
<i>Syzygium wilsonii</i>	FNQ	3 m	Red flowers
<i>Tecomanthe hillii</i>	QLD	vine	Pink-red flowers
<i>Uromyrtus tenellus</i>	Northern NSW	3 m	Rare, red new growth
<i>Uromyrtus Weeping Beauty</i>	FNQ	2 m	Weeping foliage
<i>Waterhousia unipunctata</i>	FNQ	5 m	Red new growth

Species	Origin	Height	Notes
<i>Xanthorrhoea johnsonii</i>	Northern NSW	4 m	Strap leaves, statement plant
<b>Exotic species</b>			
<i>Citrus spp.</i>	China-India	4 m	Edible fruit
<i>Ceratozamia latifolia</i>	Mexico	0.2 m	Bronze new growth
<i>Dioon spinulosum</i>	Mexico	15 m	Statement plant-easy to grow
<i>Eugenia brasiliensis</i>	South America	4 m	Edible fruit
<i>Eugenia uniflora</i>	South America	3 m	Edible fruit
<i>Plinia cauliflora</i>	South America	5 m	Edible fruit
<i>Solanum betaceum</i>	South America	3 m	Edible fruit

**Figure 1. Area at Nowra where native vegetation has been restored for wildlife.**

Note: orange hatching represents area covered under a voluntary conservation agreement.



**Figure 2. Area at Nowra some 35 years ago.**

Note: red dot represents approximate location of house

