

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/270893157>

# An analysis of the vascular flora of Mt Abbot near Bowen, Queensland

Article · January 1994

---

CITATIONS

3

---

READS

105

1 author:



Tony Bean

Department of Environment and Science

157 PUBLICATIONS 923 CITATIONS

SEE PROFILE

## **An analysis of the vascular flora of Mt Abbot near Bowen, Queensland.**

A.R. BEAN

Queensland Herbarium, Meiers Road, Indooroopilly, 4068

### **Abstract**

A total of 493 vascular plant taxa are recorded for Mt Abbot near Bowen in north Queensland. Seven vegetation types are recorded and described, two of which are poorly conserved in the region. The location and abundance of the 11 weed species is discussed. The most frequent species of Mt Abbot are listed, based on presence or absence over 32 transects. A system of Local Flora Analysis is introduced, which assesses biological and conservation significance of plant taxa in a regional context. The distributions and rarity of 54 significant species, including four new undescribed species, are documented and discussed. The flora of Mt Abbot is shown to be exceptional when compared to other areas of north Queensland. A comprehensive, annotated plant list is provided.

### **Introduction**

While many vegetation surveys have been published for areas in southern Australia in recent years (Van der Moezel, 1990; McRae, 1990; Kirkpatrick & Whinam, 1988; Coutts & Dale, 1989), very few comprehensive surveys exist for specific areas in northern Australia. The present survey is seen as timely because mountains and in particular mountaintops, which were previously almost immune to development and disturbance, are now increasingly in demand as sites for communication towers of various kinds. The construction of these towers, and particularly the access roads (where applicable) impacts upon the natural values of the mountain. Therefore the collection of data about these values is imperative. It is hoped that the information documented here will not only provide a comprehensive account of the flora of Mt Abbot, but also provide information that is immediately applicable to its management.

### **Geography and Topography**

Mt Abbot is a large mountain massif lying about 50 kilometres west of Bowen in northern Queensland, between latitudes 20°03' and 20°08' S. Fig. 1. It is clearly visible from the Bruce Highway, as it lies just 20km inland from the highway at Guthalungra. It measures approximately 12km long and 6km wide, and covers an area of 5400 hectares above the 200m contour. It forms the boundary for the four pastoral properties which surround it. The surrounding areas are coastal lowlands, which are between 80–160m above sea level. The long axis of the mountain lies in an east-west direction, and it is relatively gently sloping in that direction, although some steep sections occur. The southern slopes are very steep indeed, and are dissected by numerous rocky gullies. The northern slopes are less precipitous.

Mt Abbot (1056 metres above sea level) is the highest mountain between Eungella N.P. west of Mackay, and Mt Elliot near Townsville. Only 6.7% (363 ha) of the mountain lies above the 800m contour; it is above this altitude that many of the rare and significant plant species occur. A mere 0.2% (13 ha) of the mountains' area is above 1000m.

Geologically, the mountain is largely composed of Quartz syenite and Alkali granite (Paine & Cameron, 1972). Extensive areas of unvegetated rock slopes are a feature of the mountain, particularly at higher altitudes.

### **Climate**

At Bowen, where the nearest meteorological station is located, the average maximum temperature in January is 31.5°C, while the average minimum temperature in July is 15.0°C. Frosts are absent. The mean annual rainfall at Bowen is 1015mm, with the wettest months being January, February and

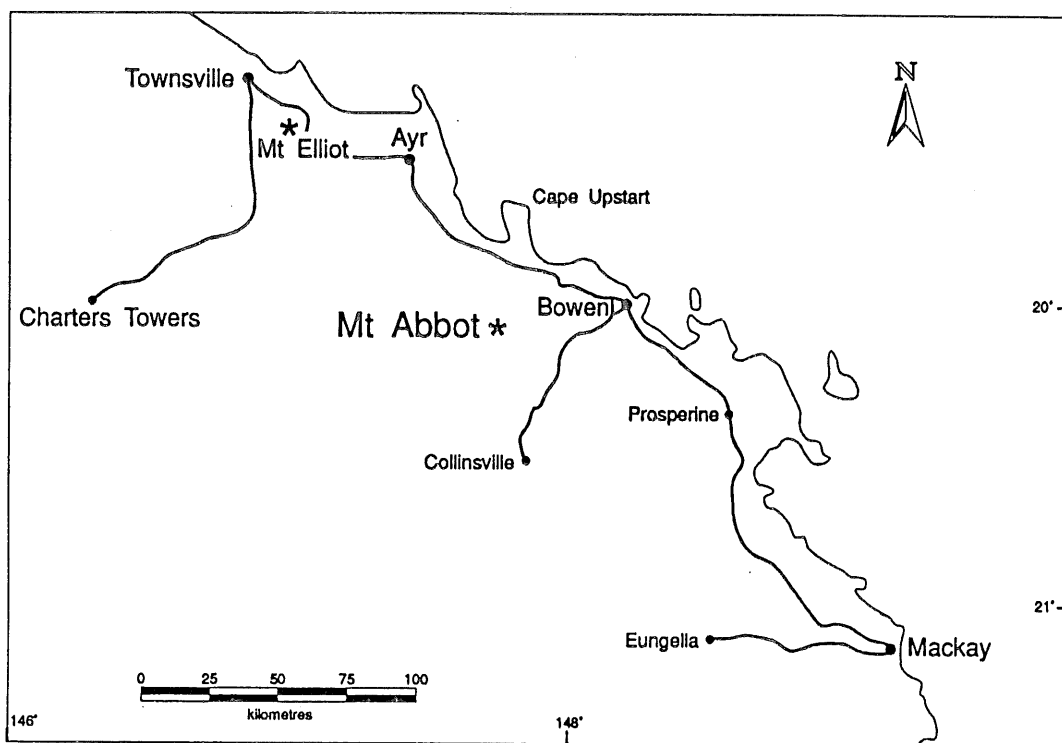


Fig. 1. Geographical location of Mt Abbot

March. From July to October, the average rainfall is less than 25mm per month (Bureau of Meteorology, 1988). These figures would accurately reflect the climate on the lower slopes of Mt Abbot, but not that of the summit and upper slopes. The reasons are twofold; Firstly, temperature decreases with an increase in altitude, and secondly, the upper slopes receive more rainfall, due to orographic influences, and that rainfall is more effective because of the reduced rate of evaporation. Hence the upper portion of Mt Abbot enjoys a wetter and cooler climate than the surrounding plains. While none of the creeks on Mt Abbot flows permanently, there are some permanent pools.

Mt Abbot has not been subject to clearing of vegetation, and it is currently free from man-made disturbances, with the exception of a small beacon/tower and helipad on the westernmost peak of the massif. This tower is serviced by air, and the total area disturbed is only about one hectare.

There is ample evidence that Mt Abbot is subject to frequent and severe fires. It would appear that most of these fires originate from "burning off" operations by graziers at the base of the mountain.

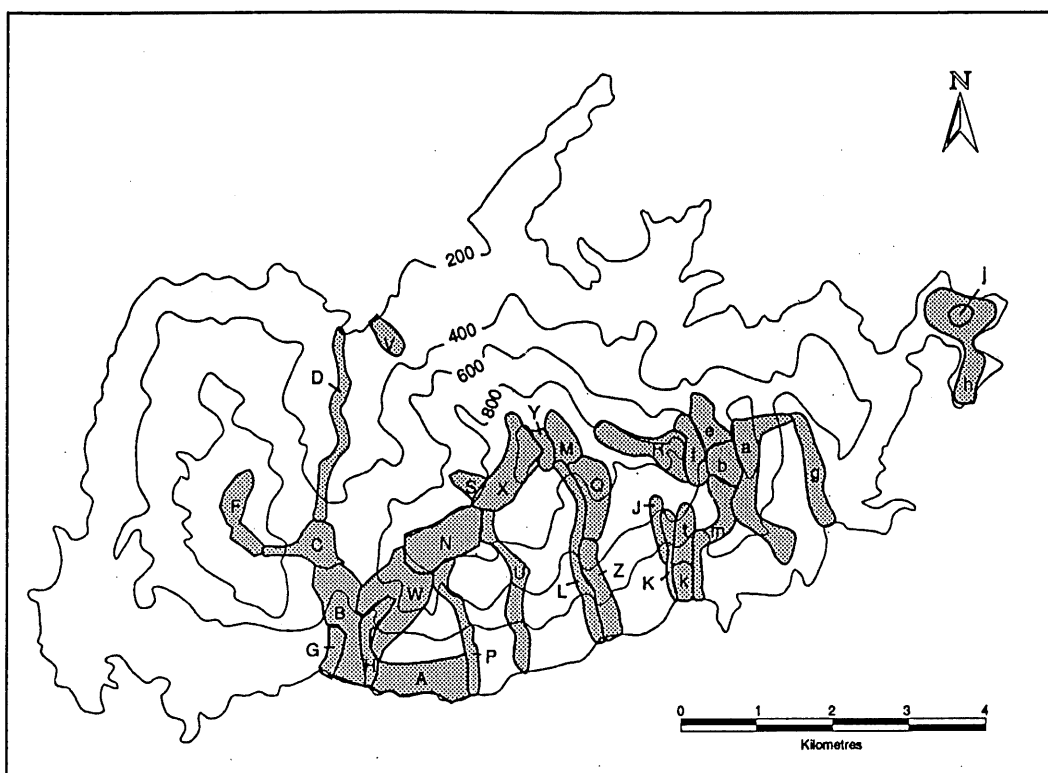
#### Botanical History

Mt Abbot had not previously been botanically explored during this century, and there were no specimens from Mt Abbot at the Queensland Herbarium (BRI). However, it is possible that the mountain was visited by botanical collectors during the 1860's. John Dallachy, Edward Bowman and particularly Eugene Fitzalan collected specimens in the Bowen area for Ferdinand Mueller (Blake, 1955). In all cases, locality data for these specimens is either scanty, misleading or non-existent. There is some evidence to suggest that Mt Abbot, or a nearby mountain, was at that time called Mt Elliot. Several species collected by these early collectors from "Mt Elliot" are not known from the Townsville area (where the present-day Mt Elliot is found), but are present around Bowen.

### Materials and methods

Field work entailed five trips, and a total of 12 days on the mountain, between March and October 1992.

Floristic surveys were carried out along thirty-two transects, with the desired routes being predetermined using aerial photographs. Transects were not always confined to a particular vegetation type, but this was done where possible. The positions of the 32 transects surveyed are shown in Fig. 2. The letters correspond to those used in Appendix 1. The area that was actually surveyed is estimated at 1025 hectares, or 19% of the total. Much of the northern side of the mountain was not surveyed, due to difficulty of access.



Fi. 2. The positions of the 32 transects on Mt Abbot. The letters used correspond to those given in Appendix 1.

All species observed in each transect were noted on a portable tape recorder. In this way, a master species list was quickly and accurately built up, with each species then being annotated by letters representing the areas in which it was found (Appendix 1). The number of transects in which a species is recorded gives a crude measure of its abundance on the mountain.

Notes were made about the structure and floristics of the vegetation types at various locations, and these form the basis for the plant community descriptions.

Plant specimens were collected from 251 species on Mt Abbot, as vouchers or for scientific study. These are lodged at the Queensland Herbarium (BRI) with some duplicated elsewhere.

The exact locations of plant species considered to be rare and/or significant were recorded, using a 1:100,000 topographic map, after referring to aerial photographs.

Vegetation descriptions follow Walker & Hopkins (1990).

## Results

### Vegetation

In general terms, the vegetation of Mt Abbot is a mosaic of eucalypt woodland and open forest, with areas of heathland, Acacia forest and closed forest.

Seven vegetation types have been recognised in this study. They are:

#### Vegetation Type 1 Montane Heath

*Pseudanthus pimeleoides* — *Callistemon* sp. — *Leucopogon cuspidatus* Tall Heathland + Bare Rock

*Pseudanthus pimeleoides*, *Callistemon* sp. and *Leucopogon cuspidatus* are all frequent. Other common shrub species are *Acacia aulacocarpa* var. *fruticosa*, *Platysace valida*, *Phebalium glandulosum*, *Acacia granitica*, *Plectranthus graveolens*, *Platysace valida* and *Labichea nitida*. The ground layer consists of *Micraira subulifolia*, *Gonocarpus acanthocarpus*, *Paspalidium constrictum*, *Dendrobium speciosum* and *Actinotus gibbonsii* (the latter only near the summit). There are large areas of sloping granite rocks, which are unvegetated or where the vegetation consists only of a few annual herbs growing in pockets of soil.

Distribution: Above 600m, on skeletal granite slopes, central part of mountain.

#### Vegetation Type 2 Brush Box/Bloodwood/Ironbark Forest

*Lophostemon confertus* — *Eucalyptus lamprophylla* — *E. drepanophylla* Mid-high Open Forest.

*Lophostemon confertus*, *Eucalyptus lamprophylla* and *E. drepanophylla* are the main canopy species, although *E. lamprophylla* occurs only on the central part of the mountain. There is often an understorey of *Acacia flavescens*, *Euroschinus falcata*, *Alphitonia excelsa* and *Eucalyptus shirleyi* (the latter on shallow soils). Other common shrubs are *Flueggea virosa* and *Cajanus confertiflorus*. The ground layer is grassy and commonly includes *Panicum mitchellii*, *Arundinella nepalensis* and *Cymbopogon refractus*.

Distribution: 300–700 metres, on steep rocky slopes all over mountain.

#### Vegetation Type 3 Wet Sclerophyll Forest

*Casuarina torulosa* — *Eucalyptus intermedia* — *E. acmenoides* — *Xanthorrhoea* Tall Open Forest

*Casuarina torulosa* often dominates, with *Eucalyptus intermedia* and *Eucalyptus acmenoides* also common. Other trees include *Banksia integrifolia* var. *compar*, *Acacia melanoxylon*, *Glochidion ferdinandi* and *Casuarina littoralis*, with *Livistona* sp. "Eungella" in the gullies. The dense ground layer consists of *Xanthorrhoea johnsonii*, *Ottocloa nodosa*, *Lepidosperma laterale*, *Gahnia aspera*, *Tetraria capillaris* and *Calochlaena dubia*. A common epiphyte is the fern *Davallia pyxidata*, and *Clematis glycinoides* is a scrambler in the ground layer.

Distribution: Above about 700 metres, on the central part of the mountain, where there is reasonable soil development.

#### Vegetation Type 4 Mixed Eucalypt Woodland

*Eucalyptus drepanophylla* — *E. platyphylla* — *E. erythrophloia* Tall Woodland

The three species listed above are most common. Other trees present are *Eucalyptus papuana* and *E. polycarpa*. The rather sparse understorey includes *Grevillea parallela*, *Erythrina vespertilio* and *Bursaria incana*. In the ground layer *Trichodesma zeylanica*, *Heteropogon contortus*, *Evolvulus alsinoides*, *Vernonia cinerea*, *Grewia retusifolia* and *Cleome viscosa* are common.

Distribution: Generally below 500 metres on the northern slopes of Mt Abbot, or below 350m on the southern slopes, on relatively fertile soils.

#### Vegetation Type 5 Acacia forest

*Acacia julifera* — *A. leptostachya* Mid-high Open Forest

*Acacia julifera* ssp. *julifera* and *A.leptostachya* dominate, with lesser quantities of *Lophostemon confertus*, *Eucalyptus exserta*, *Acacia spirorbis*, *Myoporum acuminatum*, *Bursaria incana*, *Maytenus disperma* and *Euroschinus falcata* in the canopy or understorey.

The ground layer includes *Dianella caerulea*, *Xanthorrhoea johnsonii*, *Drynaria rigidula*, *Cymbopogon refractus* and *Mnesithea rottboellioides*.

Distribution: Widespread on the western end and the mid-northern slopes of the mountain.

### **Vegetation Type 6 Gully Rainforest ± Hoop Pine emergents**

Type 6a — High Altitude gully rainforest

Notophyll Mixed Tall Closed Forest.

This community includes a variety of tree species such as *Ficus coronata*, *Syzygium oleosum*, *Abrophyllum ornans*, *Geniostoma rupestre*, *Denhamia celastroides*, *Ligustrum australicum*, *Cyathea cooperi*, *Cryptocarya hypospodia*, *Polyscias australiana*, *Archontophoenix cunninghamiana*, *Neolitsea brassii*, *Livistona* sp. 'Eungella' and *Argyrodendron polyandrum*. *Araucaria cunninghamii* is sometimes emergent.

The ground layer is dominated by ferns and orchids, such as *Asplenium australasicum*, *Sticherus flabellatus*, *Peperomia blanda* var. *floribunda*, *Dendrobium tetragonum* and *Arachniodes aristata*.

Vines include *Tetrastigma nitens*, *Piper novae-hollandiae*, *Smilax australis*, *Cissus hypoglauca*, *Geitonoplesium cymosum* and *Malaisia scandens*.

Distribution: Gullies above 600m altitude, especially Big gully and Tree-fern gully.

Type 6b — Low Altitude gully rainforest

Simple Notophyll Tall *Lophostemon grandiflorus* — *Pleiogynium timorense* Closed Forest

*Lophostemon grandiflorus* and *Pleiogynium timorense* are common in the upper stratum, as well as *Paraserianthes toona* and *Atalaya rigida*. *Araucaria cunninghamii* is sometimes emergent. The understorey layer includes *Maytenus disperma*, *Drypetes deplanchei*, *Terminalia melanocarpa*, *Mallotus philippensis*, *Pouteria sericea*, *Jagera pseudorhus*, *Austromyrtus racemulosa*, *Leptospermum brachyandrum*, *Bursaria tenuifolia*, *Sterculia quadrifida* and *Geijera salicifolia*.

Shrubs include *Capparis canescens* and *Canthium odoratum*.

Common vines and epiphytes are *Dendrophthoe glabrescens*, *Pandorea pandorana*, *Cissus oblonga*, *Platyserium veitchii*, *Dendrobium discolor* and *Alyxia spicata*.

Distribution: Gullies below about 600m altitude

### **Vegetation Type 7 Deciduous Vine thicket**

Microphyll Mid-high Closed forest with deciduous emergents.

The dominant stratum comprises *Austromyrtus racemulosa*, *Canarium australicum*, *Pleiogynium timorense*, *Sterculia quadrifida*, *Lysiphyllum hookeri*, *Strychnos axillaris*, *Alectryon connatus* and *Geijera paniculata*. These tree species are overtopped by deciduous emergents of *Brachychiton australis*, *Gyrocarpus americanus* and *Archidendropsis thozetiana*.

The common shrubs are *Memecylon pauciflorum*, *Croton* sp. nov., *Turraea brownii*, *Abutilon micropetalum*, *Capparis arborea*, *Alyxia ruscifolia* ssp. *ruscifolia* and *Wrightia pubescens* ssp. *penicillata*.

In the ground layer are *Carissa ovata*, *Scleria sphacelata* and *Ancistrachne uncinulata*.

Vines are common and include *Cissus reniformis*, *Malaisia scandens*, *Glossocarya hemiderma*, *Sarcostemma viminalis* ssp. *brunonianum*, *Dioscorea transversa*, *Jasminum didymum* ssp. *racemosum*, *Pachygone ovata* and *Melodorum leichhardtii*.

Distribution: Lower north-western slopes.

## Floristics

The total vascular flora recorded for Mt Abbot consists of 493 species (or subspecies) from 344 genera and 113 families (Appendix 1). Twelve taxa (2.4%) were not identified to species level. Of these, four are new undescribed species, four belong to genera with confused taxonomy, while the other four were unidentifiable due to lack of fertile material.

The largest families and genera represented at Mt Abbot are given in Table 1.

Table 1. Major families and genera present at Mt Abbot

Family	No. of Taxa	% of Total Taxa
Poaceae	37	7.5
Fabaceae	34	6.9
Myrtaceae	27	5.5
Euphorbiaceae	25	5.1
Asteraceae	23	4.7
Cyperaceae	19	3.9
Mimosaceae	16	3.2
Rubiaceae	16	3.2
Orchidaceae	15	3.0
Genus	No. of Taxa	% of Total Taxa
<i>Eucalyptus</i>	13	2.6
<i>Acacia</i>	13	2.6
<i>Cyperus</i>	8	1.6
<i>Dendrobium</i>	6	1.2
<i>Cissus</i>	5	1.0
<i>Crotalaria</i>	5	1.0
<i>Cryptocarya</i>	5	1.0
<i>Desmodium</i>	5	1.0
<i>Ficus</i>	5	1.0
<i>Tephrosia</i>	5	1.0

Table 2. The number of weed species and the proportion of the total flora for Mt Abbot and some other areas

	Weed spp.	Total Flora	%
Mt Abbot	11	493	2.2
Bowling Green Bay NP <sup>1</sup>	40	530	7.5
Queensland <sup>2</sup>	1161	8696	13.4
Australia <sup>2</sup>	1952	17590	11.1

<sup>1</sup> Bean (1992)      <sup>2</sup> Hnatiuk (1990)

Listed below are the most frequent species on Mt Abbot, based on presence or absence over the 32 transects. The number of transects in which each species was found is indicated in brackets. These frequencies provide only a crude measure of abundance; they indicate the diversity of habitats occupied by a species, rather than the total population of plants, and give no measure of biomass.

<i>Acacia spirorbis</i> subsp. <i>solandri</i> (14)	<i>Ficus rubiginosa</i> (14)
<i>Acronychia laevis</i> (12)	<i>Gahnia aspera</i> (15)
<i>Adiantum aethiopicum</i> (13)	<i>Hoya australis</i> subsp. <i>australis</i> (13)
<i>Alphitonia excelsa</i> (17)	<i>Larsenaikia jardinei</i> (12)
<i>Alyxia spicata</i> (16)	<i>Lophostemon grandiflorus</i> (12)
<i>Austromyrtus racemulosa</i> (14)	<i>Lophostemon confertus</i> (13)
<i>Breynia oblongifolia</i> (14)	<i>Maytenus disperma</i> (18)
<i>Bursaria tenuifolia</i> (13)	<i>Paraserianthes toona</i> (14)
<i>Canthium odoratum</i> (16)	<i>Platysace valida</i> (12)
<i>Cissus reniformis</i> (12)	<i>Plectranthus graveolens</i> (20)
<i>Dianella caerulea</i> (14)	<i>Pleigynium timorense</i> (14)
<i>Drynaria rigidula</i> (17)	<i>Pseudanthus pimeleoides</i> (12)
<i>Drypetes deplanchei</i> (13)	<i>Scleria sphacelata</i> (18)
<i>Eucalyptus drepanophylla</i> (12)	<i>Smilax australis</i> (14)
<i>Eucalyptus shirleyi</i> (13)	<i>Sterculia quadrifida</i> (14)
<i>Euroschinus falcata</i> (20)	<i>Xanthorrhoea johnsonii</i> (13)

#### Weed species on Mt Abbot

In general, the frequency of each weed species on the mountain is very low. Even *Lantana camara* (the most widespread weed species) is mostly found as scattered plants, and rarely forms clumps. Six figure Australian Metric Grid co-ordinates are given below, defining the locality of each weed species with an accuracy of  $\pm 50$  metres. In all cases, the Bogie 1:100,000 topographic map was used (map number 8457).

*Cryptostegia grandiflora* — 3 plants found at the head of a gully at 805771; also one plant at the extreme eastern end of Mt Abbot at 837790. This rampant weed is widespread on at least one property at the base of the mountain, but has yet to infest the mountain itself.

*Ageratum conyzoides* — one clump (c.100 plants) at the head of a gully at 805769; also on rocky slopes at 839787.

*Crassocephalum crepidioides* — several plants seen in vicinity of the summit, with isolated plants elsewhere.

*Tridax procumbens* — confined to the lower end of two gullies on the southern side of the mountain, growing in the rocky watercourses.

*Opuntia tomentosa* — confined to a rocky summit at 837788; where there are about 50 reproductively mature plants, plus seedlings and suckers.

*Passiflora foetida* — a few isolated plants were seen in open forests in various parts of the mountain.

*Melinis repens* — scattered plants, mostly at low altitudes, but occasionally near the summit.



*Lantana camara* — scattered occurrences all over the mountain. The largest population is at 798770.

*Bidens pilosa* — one population only, at 800772.

*Scoparia dulcis* — scattered plants in lower parts of steep rocky gullies.

*Solanum seaforthianum* — a few plants seen in rainforest at 769766.

Only these 11 weed species are recorded from Mt Abbot. They comprise 2.2% of the total flora. As shown in Table 2, this number is very low compared to that for many other areas.

#### Local Flora Analysis

In recent years, inventories of rare and threatened species have been compiled in Australia (Briggs & Leigh, 1988; Thomas & McDonald, 1989). These publications list species considered to be rare, vulnerable or threatened on a national scale, and they are now being widely used as a basis for management decisions in areas proposed for conservation or development. While the information provided by them is very useful, they do **not** provide data on the conservation value of disjunct populations, populations at the edge of the species' distribution, or species which are rare on a regional level.

In attempting to quantify the significance of plant species on a regional level, I have developed a system called Local Flora Analysis, in which species are given a score which attempts to reflect the genetic and/or conservation value of the occurrence of that species in the specified area, and therefore its need to be preserved and managed.

This system has been applied to the flora of Mt Abbot.

#### Local Flora Analysis — Scoring system

##### A. For Local Endemics

Species endemic to Mt Abbot automatically score . . . . . 10 points

Species endemic to a 100km radius score . . . . . 9 points

##### B. For Non-endemics (the vast majority)

Species in which the nearest known occurrence is greater than 500km from Mt Abbot . . . . . 5 points

Species in which the nearest known occurrence is 200–500km from Mt Abbot . . . . . 3 points

Species recorded as Vulnerable (V) or Endangered (E) on a national basis, according to Thomas & McDonald(1989) . . . . . 4 points

Species recorded as Rare (R) or poorly known (K) on a national basis, according to Thomas & McDonald (1989) . . . . . 3 points

Species reaching the northern, southern or eastern limit of its distribution at Mt Abbot . . . . . 2 points

Species rare in region i.e. known from fewer than 5 populations within a 200km radius . . . . . 1 point

For those species in section B which fall under more than one category, the individual scores are tallied. Non-indigenous species (weeds) are excluded from the calculations.

The following scores and notes on significant species are based on the best information currently available. The total of the scores for all species gives a quantitative estimate of the value of the flora of Mt Abbot for conservation purposes. The six digit numbers are Australian Metric Grid co-ordinates, which specify where the species may be found.

#### Significant species at Mt Abbot

*Plectranthus* sp. nov. — 10 points; endemic to Mt Abbot, total population about 1000 plants. It is a fleshy herb with rather silvery leaves and purple flowers. It grows on exposed granite outcrops at intermediate altitudes. 809774, 800776, 762760.

*Hemigenia* sp. nov. — 10 points; endemic to Mt Abbot, total population about 200 plants. It is a low shrub with purple flowers which grows as an understorey in open forest of *Eucalyptus intermedia* and *Casuarina torulosa* (Vegetation Type 3). 765760, 765762.

*Croton* sp. nov. — 10 points; endemic to Mt Abbot (P. Forster, pers. comm.), where it is known from just one site on the north-western slopes, where it is a frequent shrub in a Deciduous Vine Thicket. It is related to *Croton magneticus*. 759788.

*Baeckea* sp. nov. — 9 points; confined to Mt Abbot and Cape Upstart, total population on Mt Abbot about 1000 plants. It is a shrub about 2m high, with obovate leaves 3-4mm long. It has a scattered distribution on the southern slopes of the mountain, often around the edges of bare rock pavement. 776750, 759756, 794761, 799761.

*Actinotus gibbonsii* — 8 points; over 500km from nearest population, northern limit, rare in region. This is a common herb in the Stanthorpe and Border Ranges area of southern Queensland, and in N.S.W. There are records from Yuleba and Kogan, but nothing further north, so that the Mt Abbot population represents a disjunction of 740km. It grows around the summit of Mt Abbot, with the total area colonised being less than 10 hectares. 778773, 779772.

*Acacia granitica* — 8 points; over 500km from nearest population, northern limit, rare in region, c. 1000 plants on Mt Abbot. This species grows commonly in the Stanthorpe area of Queensland and adjacent parts of N.S.W., where it is a low spreading shrub often less than 1m high, rarely up to 2m high, growing on granite outcrops. It also occurs at Crows Nest. The latter locality is the nearest one to Mt Abbot, being 905km away in a direct line. On Mt Abbot, *A. granitica* is an erect shrub or small tree to 4m high, with brown, fibrous bark. This bark character is not obvious on the southern Queensland populations because of their stunted, low-growing habit. 786757, 794761, 799762, 795772, 789773.

*Cupaniopsis simulatus* — 8 points; over 500km from nearest occurrence, northern limit, rare in region. All other collections of this species have been from the Biggenden-Maryborough-Gympie area, around 750km to the south of Mt Abbot. 771767.

*Ozothamnus eriocephalus* — 7 points; listed as R&T (Code 2VC), northern limit, rare in region. Only two small populations found on Mt Abbot. It is also known from Eungella N.P., where it is not uncommon. 766756, 799763.

*Omalanthus stillingiifolius* — 6 points; 200-500km from nearest known occurrence, northern limit, rare in region. About 100 plants on Mt Abbot. This shrub is most common along coastal areas of southern Queensland and northern N.S.W., but with disjunct populations at Kroombit Tops and Blackdown Tableland. The Mt Abbot record extends the known range by 425km. It grows in sheltered areas in open eucalypt forest. 769765, 766756, 784767.

*Geijera paniculata* — 6 points; 200-500km from nearest occurrence, northern limit, rare in region. This species is a southern Queensland one, with records as far north as Rookwood and Gogango Range west of Marlborough. The Mt Abbot record extends the known range by about 350km. 759788.

*Acacia acradenia* — 6 points; 200-500km from nearest occurrence, eastern limit, rare in region. This species is common across northern Australia in semi-arid areas, south to about Longreach. The previous easternmost record was near Pentland. Hence the Mt Abbot collection extends its range to the east by 250km. 792772.

*Mirbelia pungens* — 6 points; 200-500km from nearest occurrence, northern limit, rare in region. A small prickly shrub with a very limited occurrence on Mt Abbot. 789773.

*Vittadinia scabra* — 5 points; listed as R&T (Code 3KC), southern limit. A small daisy known from a few localities between Herberton and Bowen. 839781, 799756.

*Teucrium* sp. ?nov. — 5 points; this white-flowered shrub would qualify as vulnerable on a national scale, rare in region; elsewhere known from Mt Aberdeen, Mt Jukes N.P. near Mackay and Jourama N.P. near Ingham. 770767.

*Corchorus hygrophilus* — 4 points; listed as R&T (Code 3RC), rare in region. An uncommon shrub with serrated leaves and yellow flowers, known elsewhere from Magnetic Island, Cape Cleveland, Fitzroy Caves and Eidsvold. It grows in rocky semi-rainforest areas. 787753, 799756, 770767.

*Opercularia diphylla* — 4 points; 200-500km from nearest known occurrence, rare in region. Its main distribution is southern Qld and N.S.W., with the closest records being Blackdown Tableland, North Keppel Island and Carrington Falls near Atherton. The last mentioned is the closest to Mt Abbot, being 390km distant. 791772.

*Hardenbergia perbrevidens* — 4 points; 200–500km from nearest known occurrence, rare in region. This vine occurs mostly in inland areas, with Mt Abbot being the only coastal record. The closest occurrences are White Mountains N.P., Blackdown Tableland and Ropers Peak near Capella. The disjunction is 300km. 778772, 790773.

*Micraira subulifolia* — 4 points; 200–500km from nearest occurrence, rare in region. This unusual grass grows on the ranges between Paluma and Cardwell, as well as on Walsh's Pyramid and around Davies Creek near Mareeba. It also grows on several of the Glasshouse Mountains near Brisbane. On Mt Abbot, it is common around the summit and the upper slopes on bare granite rocks.

*Hydrocotyle geraniifolia* — 3 points; northern limit, rare in region. Two small populations of this prostrate herb were found, in shady areas near watercourses. It also grows in Eungella N.P., but there is then a major disjunction to Mt Maroon near the Qld-N.S.W. border, and its main distribution is from Glen Innes southwards. 766756, 772763.

*Archontophoenix cunninghamiana* — 3 points; northern limit, rare in region. A colony of about 100 trees occurs in Big Gully south of the summit. The species is widespread in the Eungella area, and in southern Queensland. 783768.

*Glossodia major* — 3 points; northern limit, rare in region. 771764.

*Denhamia celastroides* — 3 points; northern limit, rare in region. 775753.

*Grewia australis* — 3 points; listed as R&T (Code 3K). 806771, 808763.

*Larsenaikia jardinei* — 3 points; listed as R&T (Code 3RC). Common on Mt Abbot.

*Calandrinia pickeringii* — 3 points; northern limit, rare in region. 792772.

*Labichea nitida* — 3 points; southern limit, rare in region. Common on the eastern half of Mt Abbot, absent from the western half.

*Livistona* sp. "Eungella" — 3 points, listed as R&T (Code 2RC). 773764, 780772, 782770, 783768.

*Chorizema parviflorum* — 3 points; northern limit, rare in region. 795770.

*Cassinia quinquefaria* — 3 points; northern limit, rare in region. 747759.

*Plectranthus congestus* — 3 points; southern limit, rare in region. 751763.

*Bulbostylis pyriformis* — 3 points; northern limit, rare in region. 777773.

*Banksia integrifolia* var. *compar* — 2 points; northern limit.

*Cochlospermum gillivraei* — 2 points; southern limit.

*Mischocarpus anodontus* — 2 points; northern limit.

*Sida magnifica* — 2 points; southern limit.

*Arthragrostis deschampsoides* — 2 points; southern limit.

A further 23 species are rare in the region, and hence score one point each:

*Abutilon subviscosum*, *Callicarpa candicans*, *Deeringia arborescens*, *Desmodium gunnii*, *Eucalyptus lamprophylla*, *Eucalyptus moluccana*, *Eucalyptus shirleyi*, *Galium migrans*, *Gonocarpus chinensis* ssp. *verrucosus*, *Gymnema micradenium*, *Leptosema oxylobioides*, *Leucopogon cuspidatus*, *Ligustrum australianum*, *Melicope erythrococca*, *Olearia xerophila*, *Pomaderris argyrophylla*, *Pomax umbellata*, *Pseudanthus pimeleoides*, *Rorippa gigantea*, *Rubus moluccanus*, *Tetraria capillaris*, *Trachymene montana*, *Zieria smithii*.

When the Local Flora Analysis scores (given above) are summed for each transect, it is then a simple matter to determine which parts of Mt Abbot (of those sampled) hold the richest mix of significant plant species. These areas are indicated in Table 3.

Table 3. Most floristically significant transects on Mt Abbot, as indicated by the Local Flora Analysis scores

L.F.A. Score	Transect Symbol	Name of transect(s)
41-50	R	Nova ridge
31-40	t	Zieria ridge
25-30	Z,S,X,J,L,N,U,a	Kapok ridge, Crows Nest Gully, Summit, Baeckea ridge, Big gully, pinnacle, Dog-leg gully, 650 ridge & slopes

Table 4. A comparison of Local Flora Analysis scores between Mt Abbot and other sites

Place	Total Area (ha)	No. of Species	L.F.A. Score
Mt Abbot	5400	493	191
Mt Elliot <sup>1</sup>	22000	530	84
Magnetic Island <sup>2</sup>	5814	485	80

Bean (1992), <sup>2</sup>Sandercoe (1990)

## Discussion

### Vegetation communities

Most of the communities described above occur elsewhere in the region. For example, the "Wet Sclerophyll Forest" is common on the higher parts of Mt Elliot, and at Eungella NP.

However two of the Mt Abbot plant communities are rare in the region; Vegetation type 5, the Acacia forest, is fairly widespread on Mt Abbot and also occurs on Mt Pring near Bowen, and a similar type of forest is found on Magnetic Island. It does not however occur in Mt Elliot (Bowling Green Bay N.P.) or Eungella N.P., or other areas in the region.

Vegetation type 1, the Montane heath, is a rare community in north Queensland. The nearest known occurrences (both small) are on Mt Jukes near Mackay and on Frederick Peak near Townsville, although there may also be some heathland on Cape Upstart. The Mt Abbot heathland community, covering an area of about 80 hectares, is probably the largest and most diverse heathland in the Brigalow Belt biogeographical region, as defined by Stanton & Morgan (1977).

### Floristics

Mt Abbot has a diverse flora, as is evidenced by the 493 species of vascular plants recorded within the 1025 hectares that were sampled. The total for the entire mountain is likely to be between 550 and 600 species. While most of the woody, perennial plants will have been found in the present survey, there would be numerous undetected annuals, such as grasses, sedges and ground orchids. The plant families (Poaceae, Fabaceae, Myrtaceae) and genera (Eucalyptus, Acacia, Cyperus) which dominate Mt Abbot are similarly dominant in many other open forest areas of north Queensland.

Perhaps more important than the overall flora total is the high proportion of rare or significant taxa. Three species are endemic to the mountain (*Plectranthus* sp. nov., *Croton* sp. nov. and *Hemigenia* sp. nov.), and *Baeckea* sp. nov. is confined to the immediate area. In addition, Mt Abbot appears to harbour an extraordinary number of species outliers, that is, species which have their main distribution hundreds of kilometres away, but which have a disjunct population on Mt Abbot. Most of these are "southern" taxa, and most grow in the Montane Heath community. Notable examples are *Acacia granitica*, *Actinotus gibbonsii* and *Hydrocotyle geraniifolia*.

Mt Abbot's total score for the Local Flora Analysis (191) is much higher than for Mt Elliot or Magnetic Island. (Table 4). This confirms the importance of Mt Abbot's flora. Its desirability as a conservation reserve is enhanced by its lack of weeds, as measured either in species numbers or frequency of occurrence.

It is interesting to note (from Table 3) that the most important parts of the mountain (in terms of the flora) are 1. Nova ridge, a fairly flat area to the east of the summit, which contains a large area of heathland, and is the only site for *Acacia acradenia* and is the stronghold of *Acacia granitica*; 2. Zieria ridge, a steep south-facing ridge running off Nova ridge, which has on it *Micraira subulifolia*, *Acacia granitica*, *Baeckea* sp. nov. and the only Mt Abbot occurrence of *Zieria smithii*. The next eight most important transects include the summit (home of *Actinotus gibbonsii*, *Trachymene montana*, *Hardenbergia perbrevidens* and others) and Big Gully (*Archontophoenix cunninghamiana*, *Livistona* sp. "Eungella", *Denhamia celastroides* etc.). Only one of these eight is a low-altitude transect.

#### Local Flora Analysis

The use of nationwide lists of rare and threatened species is inadequate for describing the significant flora of a region or specified area. For instance, *Acacia granitica* does not appear in Briggs & Leigh (1988) or Thomas & McDonald (1989), but its occurrence on Mt Abbot is extremely interesting and significant. Sandercoe (1990) clearly considered national R&T lists inadequate because she included in her report a list of "Noteworthy flora", which included species "considered uncommon or representing extensions to either the southern or northern limits of their known range". Only a handful of these species appear on the nationwide censuses of rare and threatened plants. Thomas & McDonald (1989) went a small way towards a regional perspective with their Appendix 3 — "Number of species recorded in each 1° grid square".

To adequately ascertain the significant flora of a region, we need to embark on some sort of Local Flora Analysis. This analysis will, of necessity, mean that instead of one book for the entire continent or state, we will also need a document for each region under consideration. I suggest that compilation of Local Flora Analyses for each one-degree grid (of which there are 181 in Queensland) would be an ideal starting point. Such analysis is labour intensive, and would not have been feasible before the computer age. However, the computer database "HERBRECS" (operated by the Queensland Herbarium) and its mapping facilities can produce such data easily. The only limiting factor is the dearth of field-gathered floristic information and herbarium vouchers.

#### Acknowledgements

I am grateful to Andrew and Marilyn Rea for their cheerful and unhesitating assistance, and their acceptance of my eccentric desire to keep climbing the mountain. Thanks to the staff of the Queensland Herbarium who assisted in identifying numerous specimens, and to Will Smith who prepared the illustrations.

#### References

- Andrews, S.B., 1990. *Ferns of Queensland*. Queensland Department of Primary Industries, Brisbane.
- Bean, A.R., 1992. Bowling Green Bay National Park Vegetation Survey. Internal Report, D.E.H. Northern Regional Centre.
- Blake, S.T., 1955. Some Pioneers in Plant Exploration and Classification. *Proceedings of the Royal Society of Queensland*. 66: 1-19.
- Briggs, J.D. & Leigh, J.H., 1988. *Rare or Threatened Australian Plants, Revised Edition*. Special Publication 14. Australian National Parks and Wildlife Service, Canberra.
- Bureau of Meteorology, 1988. *Climate Averages Australia*. Australian Government Publishing Service, Canberra.
- Coutts, R.H. & Dale, P.E.R., 1989. Seeking Pattern in Vegetation: Man and Machine and the Trees of Toohey Forest. *Proceedings of the Royal Society of Queensland*. 100: 55-66.
- Cronquist, A., 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press, New York.
- Hnatiuk, R.J., 1990. *Census of Australian Vascular Plants*. Australian Government Publishing Service, Canberra.
- Kirkpatrick, J.B. & Whinam, J., 1988. Tasmanian high mountain vegetation III — Lake Ewart, Dome Hill and Eldon Bluff. *Papers and Proceedings of the Royal Society of Tasmania* 122(2): 145-164.
- McRae, R.H.D., 1990. Vegetation of Bouddi Peninsula, New South Wales. *Cunninghamia* 2(2): 263-293.
- Paine, A.G.L. and Cameron, R.L., 1972. *Bowen, 1:250,000 Geological Series*. Australian Government Publishing Service, Canberra.

- Sandercoe, C.S., 1990. *Vegetation of Magnetic Island*. Queensland National Parks and Wildlife, Technical Report No. 1.
- Stanton, J.P. & Morgan, M.G., 1977. The Rapid Selection and Appraisal of Key and Endangered Sites: The Queensland Case Study. Unpublished Report, National Parks and Wildlife Service No. P.R.4.
- Thomas, M.B. & McDonald, W.J.F., 1989. *Rare and Threatened Plants of Queensland*. Department of Primary Industries, Brisbane.
- Van der Moezel, P.G., 1990. The vascular flora of a part of the mallee region north of Esperance, Western Australia. *Kingia* 1(3): 303-319.
- Walker, J. & Hopkins, M.S., 1990. Vegetation. In: *The Australian Soil and Land Survey Handbook*, 2nd edition (eds McDonald, R.C. et al.). Inkata Press, Melbourne.

## APPENDIX 1

## Vascular plant taxa of Mt Abbot, 50km west of Bowen.

Key to locations (see Fig. 2)

A=footslopes,south  
 C=west saddle and spur west  
 F=Tower Mtn  
 H=Hidden Ck  
 K=Dallachy gully  
 M=second summit  
 P=Tree fern gully  
 R=Nova ridge  
 U=Dog-leg gully  
 W=west & south-west of pinnacle  
 Y=summit saddle

B=Waterfall Ck catchment  
 D=Surprise Ck & adjacent  
 G=Waterfall Ck,below falls  
 J=Baeckea ridge  
 L=Big Gully  
 N=pinnacle  
 Q=Black ridge  
 S=Crows Nest gully  
 V=Deciduous Vine thicket  
 X=summit  
 Z=Kapok ridge

a=650 ridge and slopes  
 e=north-east gully  
 g=Lepto creek  
 j=mini roma  
 m=storm gully

b=grassy saddle  
 f=north & east of moluccana point  
 h=far east  
 k=bare hill  
 t=zieria ridge

Flowering plant family names follow Cronquist (1981), and are arranged alphabetically. Fern family names follow Andrews (1990). Nomenclature of genera and species are in line with those accepted by the Queensland Herbarium. An asterisk indicates that a species is introduced.

FERNS	Locations	Vegetation Types
ADIANTACEAE		
<i>Adiantum aethiopicum</i>	BCHJUWXXZaefjt	2,3,4,5,6
<i>Adiantum hispidulum</i>	PRU	3,6a
<i>Adiantum hispidulum</i> var. Q1	H	6b
ASPIDACEAE		
<i>Arachniodes aristata</i>	L	6a
<i>Lastreopsis tenera</i>	LPSU	6a
ASPLENIACEAE		
<i>Asplenium australasicum</i>	LPS	6a
<i>Asplenium paleaceum</i>	P	6a
<i>Asplenium polyodon</i>	S	6a
BLECHNACEAE		
<i>Blechnum cartilagineum</i>	L	6a
<i>Doodia aspera</i>	L	6a
<i>Doodia caudata</i>	JWt	2,3
CYATHEACEAE		
<i>Cyathea cooperi</i>	P	6a

DAVALLIACEAE		
Davallia denticulata	C	2
Davallia pyxidata	XY	3
DENNSTAEDTIACEAE		
Pteridium esculentum	BMPX	2,3
DICKSONIACEAE		
Calochlaena dubia	MRXY	3
GLEICHENIACEAE		
Sticherus flabellatus	P	6a
HEMIONITIDACEAE		
Paraceterach muelleri	BZ	4
POLYPODIACEAE		
Drynaria rigidula	BCDFJNPRSUXaefmt	1,2,4,5,6,7
Microsorium punctatum	S	6a
Platyserium bifurcatum	LNx	3,6a
Platyserium veitchii	DHJKPUZagjm	2,5,6
Pyrrosia confluens	LS	6a
Pyrrosia rupestris	SY	6a
PSILOTACEAE		
Psilotum nudum	e	6b
SCHIZAEACEAE		
Schizaea bifida	Q	3
SINOPTERIDACEAE		
Cheilanthes nudiuscula	Dk	4,6b
Cheilanthes sieberi	CFNRa	1,2,5
Cheilanthes tenuifolia	W	3
THELYPTERIDACEAE		
Macrothelypteris torresiana	H	6b
GYMNOSPERMS		
ARAUCARIACEAE		
Araucaria cunninghamii	DGHJKLU	6
CYCADACEAE		
Cycas media	Hagm	2,4
ANGIOSPERMS		
ACANTHACEAE		
Brunoniella australis	QRbf	2,3
Hypoestes floribunda	e	6b
Pseuderanthemum variabile	JPSat	3,6a
Rostellularia adscendens	ACFQRUWa	2,3,5
AGAVACEAE		
Cordyline murchisoniae	L	6a
AMARANTHACEAE		
Achyranthes aspera	e	6b
Deeringia amaranthoides	HS	6
Deeringia arborescens	S	6a
ANACARDIACEAE		
Euroschinus falcata		
var. angustifolia	ABCFGHKLUVZaefghjkm	2,3,4,5,6,7
Pleiogynium timorense	BDGHKPUVaehjkm	4,5,6b,7
ANNONACEAE		
Fitzalania heteropetala	GHLPSVaehm	6b,7
Melodorum leichhardtii	SUve	6,7
Polyalthia nitidissima	DHKLPUeg	6b
APIACEAE		
Actinotus gibbonsii	X	1
Hydrocotyle geraniifolia	PU	3
Platysace valida	BCFJMNQRWaf	1,2,5

Trachymene montana	XY	1
APOCYNACEAE		
Alyxia ruscifolia ssp. ruscifolia	Vagh	2,6b,7
Alyxia spicata	BHJKRUWZaefgikmt	2,4,5,6
Carissa ovata	V	7
Parsonsia plaesiophylla	BCHKRUam	2,4,5
Parsonsia velutina	HLUem	6
Wrightia pubescens ssp. penicillata	V	7
Wrightia saligna	A	4
ARALIACEAE		
Polyscias australiana	L	6a
Polyscias elegans	BHJSVZejmt	2,5,6,7
Schefflera actinophylla	KLPU	6a
ARECACEAE		
Archontophoenix cunninghamiana	L	6a
Livistona sp. "Eungella"	LUXY	3,6a
ARISTOLOCHIACEAE		
Aristolochia pubera	Cj	2,4
ASCLEPIADACEAE		
*Cryptostegia grandiflora	bh	4
Cynanchum bowmanii	Ca	4
Gymnanthera oblonga	Dg	6b
Gymnema micradenium	m	6b
Hoya australis ssp. australis	BDGHJNPRSUefm	1,2,5,6
Marsdenia rostrata	P	6a
Marsdenia viridiflora	k	5
Sarcostemma viminale ssp. brunonianum	DKUVZg	6,7
Secamone elliptica	JVZah	6b,7
Tylophora erecta	Aa	4
ASTERACEAE		
*Ageratum conyzoides	bj	4
*Bidens pilosa	R	2
Blumea mollis	m	6b
Bracteantha bracteata	CFQRbf	2,5
Camptacra barbata	b	4
Cassinia quinquefaria	C	5
Chrysocephalum apiculatum	AFah	2,4
*Conyza aegyptiaca	b	4
*Crassocephalum crepidioides	BUX	2,3
Emilia sonchifolia	AFRb	2,3,4
Epaltes australis	DU	6b
Gynura drymophila var. drymophila	CFPRWZf	1,2
Helichrysum rupicola	NRW	1,2
Lagenifera stipitata	Q	3
Olearia xerophila	NW	1
Ozothamnus eriocephalus	Pt	2
Pterocaulon sphacelatum	ADRhk	1,2,5
Sigesbeckia orientalis	DUB	4,6b
*Tridax procumbens	GH	4
Vernonia cinerea	ABFRWZafhkt	2,3,4,5
Vittadinia hispidula	AC	4,5
Vittadinia scabra	hjk	4
Wedelia spilanthoides	AHNRXabf	2,3
BIGNONIACEAE		
Pandorea pandorana	ADGHUXah	3,6
BIXACEAE		
Cochlospermum gillivraei	DJUZakt	4
BORAGINACEAE		
Heliotropium sp. indet.	D	4



Trichodesma zeylanica	A	4
BRASSICACEAE		
Rorippa gigantea	N	3
BURSERACEAE		
Canarium australianum	DVf	4,7
CACTACEAE		
*Opuntia tomentosa	j	2
CAESALPINIACEAE		
Cassia absus	A	4
Cassia concinna	A	4
Cassia mimosoides	CFXb	2,3,5
Labichea nitida	JRZafgjt	1,2
Lysiphyllum hookeri	V	7
Senna aciphylla	Rf	2
Senna surattensis ssp. surattensis	ah	6b
CAMPANULACEAE		
Lobelia purpurascens	FRb	2,5
Wahlenbergia caryophylloides	Cf	2
CAPPARACEAE		
Capparis arborea	SV	6,7
Capparis canescens	ABCHWZa	2,4,6
Capparis lucida	V	7
Cleome viscosa	DZafhj	2,4,5
CARYOPHYLLACEAE		
Polycarpaea corymbosa	a	2
CASUARINACEAE		
Casuarina littoralis	FMRWX	3
Casuarina torulosa	FMNQRUWXYft	2,3,5
CELASTRACEAE		
Cassine melanocarpa	DKLSUe	6b
Denhamia celastroides	LU	6a
Maytenus disperma	ABCFGHNRUWZaefhjkt	2,3,4,5,6
CHENOPODIACEAE		
Chenopodium carinatum	N	3
CLUSIACEAE		
Hypericum gramineum	BFLUZ	2,6
COMBRETACEAE		
Terminalia melanocarpa	DGHKVgm	2,4,6b
Terminalia porphyrocarpa	JZa	6b
COMMELINACEAE		
Aneilema acuminatum	P	6a
Commelina sp. indet.	DHUX	3,6
Murdannia graminea	Fa	5
CONVOLVULACEAE		
Evolvulus alsinoides	ABCak	2,4
Ipomoea plebeia	a	4
CUCURBITACEAE		
Diplocyclos palmatus	a	4
Mukia maderaspatana	AJ	4
Zehneria cunninghamii	P	3
CYPERACEAE		
Bulbostylis barbata	AB	4
Bulbostylis pyriformis	X	3
Cyperus cyperoides	b	4
Cyperus dietrichiae var. brevibracteatus	C	5
Cyperus difformis	D	4
Cyperus fulvus	A	4
Cyperus perangustus	Zabghj	2,4
Cyperus polystachyos	DY	4

<i>Cyperus scaber</i>	X	3
<i>Cyperus trinervis</i>	B	4
<i>Fimbristylis cinnamometorum</i>	F	5
<i>Fimbristylis dichotoma</i>	AX	3,4
<i>Gahnia aspera</i>	AFRSUWZabefhjt	2,3,4
<i>Lepidosperma laterale</i>	NRWXt	3
<i>Scleria brownii</i>	ABCFHafhk	4
<i>Scleria levis</i>	b	4
<i>Scleria mackaviensis</i>	AWZ	4
<i>Scleria sphacelata</i>	BDGHJKLRUVWZafhjt	2,3,4,6,7
<i>Tetraria capillaris</i>	LMNQW	3
DILLENIACEAE		
<i>Hibbertia cistoidea</i>	X	3
<i>Hibbertia scandens</i>	X	3
<i>Hibbertia stricta</i>	RWZft	2,3
DIOSCOREACEAE		
<i>Dioscorea transversa</i>	V	7
DROSERACEAE		
<i>Drosera peltata</i>	BFLUZ	4,6
EBENACEAE		
<i>Diospyros geminata</i>	DHKLPUVaekm	6,7
ELAEOCARPACEAE		
<i>Elaeocarpus eumundi</i>	L	6a
<i>Elaeocarpus obovatus</i>	HKSem	6a
<i>Sloanea macbrydei</i>	L	6a
EPACRIDACEAE		
<i>Leucopogon cuspidatus</i>	FNRWXZfjt	1,5
<i>Melichrus urceolatus</i>	RWf	1
EUPHORBIACEAE		
<i>Acalypha eremorum</i>	D	6b
<i>Alchornea thozetiana</i>	e	6b
<i>Antidesma parvifolium</i>	DJVahk	4,6b,7
<i>Baloghia inophylla</i>	KLsm	6a
<i>Breynia oblongifolia</i>	ABCFNRWZabefhk	2,4,5
<i>Claoxylon tenerifolium</i>	BLPSUaefjt	2,3,5,6
<i>Cleistanthus dallachyanus</i>	Km	6b
<i>Croton arnhemis</i>	h	6b
<i>Croton</i> sp. nov. (Bean 4734)	V	7
<i>Drypetes deplanchei</i>	BDGHKPUVaghjm	2,6,7
<i>Euphorbia tannensis</i> ssp <i>eremophila</i>	DWahkt	2,3
<i>Flueggea virosa</i>	ACHWZahk	2,4
<i>Glochidion apodogynum</i>	PDHabem	6b
<i>Glochidion ferdinandi</i>	UX	3
<i>Mallotus nesophilus</i>	e	6b
<i>Mallotus philippensis</i>	BGHLPSehm	3,6
<i>Omalanthus populifolius</i>	XY	3,6a
<i>Omalanthus stillingiifolius</i>	LPS	3,6a
<i>Petalostigma pubescens</i>	Af	4
<i>Phyllanthus albiflorus</i>	Q	3
<i>Phyllanthus fuernrohrii</i>	DZgj	2,4
<i>Phyllanthus novae-hollandiae</i>	PUZafjk	6
<i>Phyllanthus virgatus</i>	CFQat	2,4,5
<i>Poranthera microphylla</i>	FQRXk	3
<i>Pseudanthus pimeleoides</i>	FJMNQRWXZfjt	1,2,5
FABACEAE		
<i>Abrus precatorius</i>	H	6b
<i>Aeschynomene micrantha</i>	FR	5
<i>Austrostenisia blackii</i>	m	6b
<i>Cajanus confertiflorus</i>	ABWXZCafhk	2,4,5

Canavalia cathartica	a	4
Chorizema parviflorum	R	1
Crotalaria calycina	b	4
Crotalaria juncea	Ah	4
Crotalaria medicaginea	A	4
Crotalaria montana	BRf	2,4
Crotalaria spectabilis	a	4
Desmodium brachypodium	BQ	2,3
Desmodium gangeticum	A	4
Desmodium gunnii	X	3
Desmodium heterocarpon	b	4
Desmodium rhytidophyllum	ACFHNWZa	2,3,4
Erythrina vespertilio	AHak	4
Flemingia parviflora	ABbh	2,4
Galactia tenuiflora	AWak	4
Glycine clandestina	CQ	2,3
Hardenbergia perbrevidens	RX	3
Indigofera glandulosa	b	4
Indigofera hirsuta	AChk	4
Indigofera pratensis	ABCNWZbh	2,4
Indigofera tryonii	W	2
Leptosema oxylobioides	QR	1,5
Mirbelia pungens	R	1
Rhynchosia minima	Aah	4
Tephrosia astragaloides	a	4
Tephrosia brachyodon	ACWZa	2,4
Tephrosia filipes	FR	2,5
Tephrosia juncea	A	4
Tephrosia leptoclada	A	4
Zornia muriculata ssp. angustata	CF	5
FLACOURTIACEAE		
Scolopia braunii	HKLUWem	6
FLAGELLARIACEAE		
Flagellaria indica	KS	6a
GESNERIACEAE		
Boea hygroskopica	BLX	6a
GOODENIACEAE		
Goodenia grandiflora	CNRWf	2,3
GROSSULARIACEAE		
Abrophyllum ornans	PU	6a
HALORAGACEAE		
Gonocarpus acanthocarpus	JMQRWXft	1
Gonocarpus chinensis ssp. verrucosus	LU	6
Haloragis heterophylla	F	5
HERNANDIACEAE		
Gyrocarpus americanus	V	7
JUNCACEAE		
Juncus sp. indet.	b	4
LAMIACEAE		
Ajuga australis	Rbf	3,4
Anisomeles malabarica	BWZafk	2,4
Hemigenia sp. nov. (Bean 4204)	N	3
Plectranthus congestus	C	5
Plectranthus graveolens	BCDGHJMNQRSUWXZafgmt	1,2,4,5
Plectranthus sp. nov. (Bean 4860)	Naf	2
Teucrium sp. ?nov.	S	6a
LAURACEAE		
Cassytha filiformis	ABCHZafjt	2,3,4
Cryptocarya bidwillii	Sem	6a

<i>Cryptocarya glaucescens</i>	KL	6a
<i>Cryptocarya hypospodia</i>	LSU	6a
<i>Cryptocarya triplinervis</i>	HKe	6
<i>Endiandra discolor</i>	L	6a
<i>Litsea fawcettiana</i>	KS	6a
<i>Litsea glutinosa</i>	GHVem	6,7
<i>Neolitsea brassii</i>	HLPSU	6a
LECYTHIDACEAE		
<i>Planchonia careya</i>	ABhk	4
LILIACEAE		
<i>Crinum angustifolium</i>	k	4
<i>Curculigo ensifolia</i>	Q	3
<i>Dianella caerulea</i>	ABCFNRUWafjkm	2,3,4,5
LOGANIACEAE		
<i>Geniostoma rupestre</i>	L	6a
<i>Strychnos axillaris</i>	V	7
LORANTHACEAE		
<i>Amyema conspicuum</i> ssp. <i>conspicuum</i>	DKUa	6b
<i>Dendrophthoe glabrescens</i>	DGHa	6b
MALVACEAE		
<i>Abelmoschus moschatus</i> ssp. <i>tuberosus</i>	k	4
<i>Abutilon micropetalum</i>	V	7
<i>Abutilon subviscosum</i>	H	6b
<i>Hibiscus heterophyllus</i> ssp. <i>luteus</i>	BJPRZaft	1,2
<i>Hibiscus meraukensis</i>	DZaj	4
<i>Hibiscus normanii</i>	Wf	2
<i>Sida magnifica</i>	a	4
MELASTOMATACEAE		
<i>Memecylon pauciflorum</i>	GHKVeh	6b,7
MELIACEAE		
<i>Turraea pubescens</i>	ABHPVZah	6b,7
MENISPERMACEAE		
<i>Pachygone ovata</i>	HKPUVem	6,7
<i>Sarcopetalum harveyanum</i>	Lkm	6a
<i>Stephania japonica</i>	BHU	6
<i>Tinospora smilacina</i>	D	6b
MIMOSACEAE		
<i>Acacia acradenia</i>	R	1
<i>Acacia aulacocarpa</i> var. <i>fruticosa</i>	MNRWXagjt	1,2,5
<i>Acacia bidwillii</i>	AZah	4
<i>Acacia decora</i>	W	2
<i>Acacia fasciculifera</i>	am	4
<i>Acacia flavescens</i>	ABCWZ	2,5
<i>Acacia granitica</i>	JRZt	1
<i>Acacia holosericea</i>	a	4
<i>Acacia julifera</i> ssp. <i>julifera</i>	CDFJfkt	2,5
<i>Acacia leptostachya</i>	CRf	5
<i>Acacia melanoxylon</i>	LSUY	3
<i>Acacia simsii</i>	BCRWZafjt	2,4,5
<i>Acacia spirorbis</i> ssp. <i>solandri</i>	BCFJKNRWZafjkm	2,3,4,5
<i>Albizia procera</i>	b	4
<i>Archidendropsis thozetiana</i>	HVm	6b,7
<i>Paraserianthes toona</i>	BDGHKLPSUaegm	2,5,6b
MORACEAE		
<i>Ficus coronata</i>	LP	6a
<i>Ficus obliqua</i>	KSUZejm	2,6
<i>Ficus opposita</i>	Dhb	4
<i>Ficus rubiginosa</i>	BCGKPUZaghjkm	2,4,5,6
<i>Ficus virens</i>	DKLPSUegm	6

Malaisia scandens	HKL Veh	6,7
Streblus brunonianus	BLSgm	6
MYOPORACEAE		
Myoporum acuminatum	ABCFNRWafm	3,5
MYRSINACEAE		
Embelia australiana	S	6a
Rapanea porosa	L	6a
Rapanea variabilis	ACUa	4,5
MYRTACEAE		
Austromyrtus racemulosa	BDGHKLPUVZeghm	2,5,6b,7
Baeckea sp. nov. (Bean 5173)	JWt	1
Callistemon sp. indet.	MNRWXf	1
Callistemon viminalis	LPU	6b
Eucalyptus acmenoides	BCNQRWafjt	3
Eucalyptus drepanophylla	ABCFWZabfhkt	2,4
Eucalyptus erythrophloia	AZhk	4
Eucalyptus exserta	CFNJWZajt	2,5
Eucalyptus intermedia	CFMNQRWXabf	3
Eucalyptus lamprophylla	BCWZft	2
Eucalyptus moluccana	R	2
Eucalyptus papuana	ABCDZahk	4
Eucalyptus platyphylla	AZahk	4
Eucalyptus polycarpa	ABCahk	4
Eucalyptus shirleyi	CFJNRWZafhjkt	2,4,5
Eucalyptus tereticornis	ABDGHPUbekm	4,6b
Eucalyptus tessellaris	AD	4
Leptospermum brachyandrum	BDGLPUZafgi	2,6b
Leptospermum neglectum	NRWj	2
Lophostemon confertus	BCFJKQWZafjkt	2,5
Lophostemon grandiflorus	BDGHKPUaeghj	6b
Melaleuca linariifolia	D	6b
Melaleuca nervosa f. nervosa	AC	5
Melaleuca nervosa f. pendulina	BDem	6b
Melaleuca viridiflora	Fab	5
Syzygium australe	LKPSUem	6a
Syzygium oleosum	LPRU	6a
OLEACEAE		
Chionanthus ramiflora	HKLPUVm	6a
Jasminum didymum ssp. racemosum	ACHVZahjk	6,7
Jasminum simplicifolium	BDgh	6
Ligustrum australianum	LSU	6a
Notelaea microcarpa	FRVWf	2,3
Olea paniculata	Sem	6
ONAGRACEAE		
Ludwigia octovalvis	Dg	6b
ORCHIDACEAE		
Acianthus/Corybas sp.(leaves only)	NZ	3
Bulbophyllum newportii	RXY	3
Bulbophyllum schillerianum	LU	6a
Caladenia carnea	N	3
Cymbidium canaliculatum	DKbj	4
Dendrobium bowmanii	L	6a
Dendrobium discolor	Dg	6b
Dendrobium gracilicaule	SY	6a
Dendrobium numentiae	U	6a
Dendrobium speciosum	CLNPRUXf	1,6
Dendrobium tetragonum	L	6a
Geodorum densiflorum	B	2
Glossodia major	N	3

<i>Pterostylis nutans</i>	U	3
<i>Sarcochilus</i> sp. indet.	SU	6a
OXALIDACEAE		
<i>Oxalis perennans</i>	ACFMUXYafjk	2,3
PANDANACEAE		
<i>Pandanus spiralis</i>	D	4
PASSIFLORACEAE		
* <i>Passiflora foetida</i>	ACRafk	2,4
PIPERACEAE		
<i>Peperomia blanda</i> var. <i>floribunda</i>	HLPSUem	6
<i>Peperomia tetraphylla</i>	S	6a
<i>Piper novae-hollandiae</i>	LPU	6a
PITTOSPORACEAE		
<i>Bursaria incana</i>	ACFNQRWafk	2,4,5
<i>Bursaria tenuifolia</i>	BDGHKLPUefgmt	6
<i>Citriobatus spinescens</i>	h	6b
<i>Pittosporum venulosum</i>	LS	6a
POACEAE		
<i>Alloteropsis semialata</i>	N	3
<i>Ancistrachne uncinulata</i>	HKVe	6b,7
<i>Aristida queenslandica</i> var. <i>dissimilis</i>	Dahjkt	2,4
<i>Arthrargrostis deschampsiioides</i>	a	4
<i>Arundinella nepalensis</i>	ABCFHZajk	2,3,4
<i>Bothriochloa ewartiana</i>	Aab	4
<i>Capillipedium spicigerum</i>	BNb	2,4
<i>Cymbopogon ambiguus</i>	Za	4
<i>Cymbopogon bombycinus</i>	RWah	2,5
<i>Cymbopogon refractus</i>	ABCfJWahjkt	2,3,4,5
<i>Dicanthium sericeum</i>	A	4
<i>Digitaria ammophila</i>	Ah	4
<i>Digitaria breviglumis</i>	Wat	2,3
<i>Enneapogon lindleyanus</i>	h	4
<i>Entolasia stricta</i>	NWZjt	2,3
<i>Eragrostis brownii</i>	C	5
<i>Eragrostis leptostachya</i>	Dj	4,5
<i>Eragrostis schultzei</i>	j	2
<i>Eremochloa bimaculata</i>	F	5
<i>Eriachne mucronata</i>	a	4
<i>Eriachne pallescens</i>	Wjt	2,4
<i>Eulalia aurea</i>	A	4
<i>Heteropogon contortus</i>	ACDahj	4
<i>Heteropogon triticeus</i>	ACFZabf	4
* <i>Melinis repens</i>	ABCfRWa	3,4
<i>Micraira subulifolia</i>	JLMNPQRXXZft	1
<i>Mnesithea rothboelliioides</i>	ABCfNRWZb	2,4,5
<i>Oplismenus aemulus</i>	e	6b
<i>Ottochloa nodosa</i>	MUXY	3
<i>Panicum effusum</i>	Zaf	2
<i>Panicum mitchellii</i>	ABCWZaft	2
<i>Paspalidium constrictum</i>	FJRWXZafjt	1,2
<i>Paspalidium gracile</i>	h	4
<i>Setaria dielsii</i>	BSaj	4
<i>Setaria surgens</i>	D	5
<i>Sorghum leiocladum</i>	ab	4
<i>Themeda triandra</i>	ABCfQRabfhj	2,3,4
POLYGALACEAE		
<i>Polygala linariifolia</i>	CR	2
POLYGONACEAE		
<i>Muehlenbeckia rhyticarya</i>	MQRXjk	1,3

PORTULACACEAE		
<i>Calandrinia pickeringii</i>	R	1
<i>Portulaca bicolor</i>	NRX	1
PROTEACEAE		
<i>Banksia integrifolia</i> var. <i>compar</i>	MNWX	3
<i>Grevillea parallela</i>	ABC	4
<i>Persoonia falcata</i>	BCJWZafk	2,4,5
RANUNCULACEAE		
<i>Clematis glycinoides</i>	MPRSY	3
RHAMNACEAE		
<i>Alphitonia excelsa</i>	ABCDHFJPUVZafhjkt	2,3,4,5
<i>Pomaderris argyrophylla</i>	NRUW	1,2
ROSACEAE		
<i>Rubus moluccanus</i>	XY	3
RUBIACEAE		
<i>Canthium attenuatum</i>	BDZahjk	2,5
<i>Canthium odoratum</i>	BCDGHJPVZaefghjm	6,7
<i>Galium migrans</i>	PUY	3
<i>Knoxia sumatrensis</i>	b	4
<i>Larsenaikia jardinei</i>	DKLRUZaefjkm	2,3,5,6
<i>Larsenaikia ochreatea</i>	C	5
<i>Morinda acutifolia</i>	HKLPUefgjmt	6
<i>Oldenlandia galioides</i>	DL	6
<i>Opercularia diphylla</i>	R	3
<i>Pavetta australiensis</i>	DLSaek	6
<i>Pogonolobus reticulatus</i>	AWZafh	2,4
<i>Pomax umbellata</i>	Z	3
<i>Psychotria daphnoides</i>	Rafgjt	3,6
<i>Psychotria fitzalanii</i>	GHKLSUem	6
<i>Spermacoce</i> sp. <i>indet.</i>	ABCFRWZahk	2,4
<i>Timonius timon</i>	DPUem	4
RUTACEAE		
<i>Acronychia laevis</i>	DHKLPRSUYaem	3,4,6
<i>Geijera paniculata</i>	V	7
<i>Geijera salicifolia</i>	DHVahj	2,4,6b
<i>Melicope erythrococca</i>	V	7
<i>Phebalium glandulosum</i>	MR	1
<i>Zieria smithii</i>	t	2
SANTALACEAE		
<i>Exocarpos latifolius</i>	Vh	6b,7
SAPINDACEAE		
<i>Alectryon connatus</i>	Vj	7
<i>Arytera divaricata</i>	HPSUem	6
<i>Atalaya rigida</i>	HVm	6b
<i>Cupaniopsis anacardioides</i>	BDHPaehm	6
<i>Cupaniopsis simulatus</i>	SU	6a
<i>Dodonaea lanceolata</i>	CRhk	2,5
<i>Dodonaea viscosa</i> ssp. <i>burmanniana</i>	ABGHVPVZajk	2,4,5
<i>Harpullia pendula</i>	SU	6a
<i>Jagera pseudorhus</i>	HKPSUZefmt	2,5,6b
<i>Mischocarpus anodontus</i>	Sm	6a
SAPOTACEAE		
<i>Amorphospermum antilogum</i>	GHV	6b,7
<i>Mimusops elengi</i>	V	7
<i>Planchonella cotinifolia</i> var. <i>pubescens</i>	V	7
<i>Planchonella laurifolia</i>	KLSU	6a
<i>Planchonella myrsinoides</i>	Ve	6b,7
<i>Planchonella pohlmaniana</i>	KZamt	6
<i>Pouteria sericea</i>	DGKPUVeghm	6b,7

SCROPHULARIACEAE		
Buchnera gracilis	R	1
*Scoparia dulcis	BLUbm	6
SMILACACEAE		
Eustrephus latifolius	ACHUZafh	3,4,5,6
Geitonoplesium cymosum	LU	6a
Smilax australis	BHJKPSUWZahjmt	2,3,6a
SOLANACEAE		
Duboisia myoporoides	M	3
Solanum ellipticum	j	4
Solanum opacum	FU	2
*Solanum seaforthianum	S	6a
Solanum stelligerum	NUXY	3
STACKHOUSIACEAE		
Stackhousia intermedia	CF	5
STERCULIACEAE		
Argyrodendron polyandrum	HSejm	6a
Brachychiton australis	DKVZaghjm	6b,7
Brachychiton populneus ssp.trilobus	ABCNWZak	2,5
Commersonia bartramia	Y	6a
Keraudrenia corollata	MQRXYj	1,2
Melhanina oblongifolia	AHb	4
Sterculia quadrifida	DGHJLPUVZaghkm	2,4,6b,7
Waltheria indica	DNa	2,4
STYLIDIACEAE		
Stylidium capillare	L	6a
Stylidium eriorrhizum	CFMNRWt	1,2,5
THYMELAEACEAE		
Pimelea linifolia	NQRW	1,2
Wikstroemia indica	C	2
TILIACEAE		
Corchorus hygrophilus	SZk	6b
Grewia australis	ab	6b
Grewia retusifolia	ABHah	4
ULMACEAE		
Celtis paniculata	KS	6a
Trema tomentosa	DHSVZafjkmt	3,6,7
URTICACEAE		
Dendrocnide moroides	SU	6a
Pipturus argenteus	HSUe	6
VERBENACEAE		
Callicarpa candicans	Zhkt	2,4
Clerodendrum floribundum	HRUaj	2,4
Glossocarya hemiderma	DVeh	6,7
*Lantana camara	BCFHQRSWajm	3,6
VIOLACEAE		
Hybanthus stellarioides	ACFX	3
Viola hederacea	LMNQRUXY	3,6a
VITACEAE		
Cayratia clematidea	RZ	3
Cayratia japonica	S	6a
Cayratia trifolia	W	2
Cissus hastata	S	6a
Cissus hypoglauca	LPY	3,6a
Cissus oblonga	HKPUejm	6b
Cissus opaca	PWZbht	2,3,4
Cissus reniformis	BCGHJPVZahkt	2,4,6,7
Tetrastigma nitens	HJSaem	6



## XANTHORRHOEACEAE

*Lomandra filiformis* ssp. *filiformis*

Wbft

2,5

*Lomandra longifolia*

Ahj

4

*Lomandra multiflora*

ABCFHNWabk

2,3,4

*Xanthorrhoea johnsonii*

BCFMNQRWXafjt

2,3,5

## ZINGIBERACEAE

*Alpinia caerulea*

LNPRSUY

6a