

The floristics and structure of dry rainforest at Forty Mile Scrub National Park, north Queensland

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*Fensham, R.J. (Queensland Herbarium, Queensland Department of Environment and Heritage, Meiers Road, Indooroopilly Qld 4068) 1995. The floristics and structure of dry rainforest at Forty Mile Scrub National Park, north Queensland. Cunninghamia 4(3): 483–495. The floristics and structure of those areas of dry rainforest in a relatively natural condition at Forty Mile Scrub National Park (18°08'S 144°50'E) 140 km west of Cardwell, north Queensland are described. Trees make up about 36% of the 151 native taxa. *Notelaea microcarpa* is the dominant tree throughout most of the forest and *Alectryon connatus*, *Austromyrtus* sp. (Forty Mile Scrub, G.C. Stocker–Coll No. 1785), *Geijera salicifolia* and *Strychnos psilosperma* are also prominent tree species in the continuous tree canopy at 5–7 m height. Emergent trees are sparse.*

The stand structure of the dominant tree species in dry rainforest is characterised by a general lack of small size classes and it is suggested that recruitment of seedlings may be a phasic event coinciding with a series of wet years.

Introduction

Rainforest-related vegetation occurs in Australia under climatic regimes that ensure seasonally dry substrates for extended periods. Despite the apparent contradiction this vegetation is included within the 'rainforest' umbrella by virtue of the following features (see Fensham 1995):

- 1) closed canopy on well-soiled substrates
- 2) very sparse herbaceous layer
- 3) plants with taxonomic affinities to rainforest of high rainfall environments
- 4) mixed tree species dominance
- 5) fire retardance and sensitivity

The National Rainforest Conservation Programme has funded a recent wave of research directed towards broadscale plant and animal survey, functional ecology, autecology of individual species and conservation assessment of dry rainforest of the eastern seaboard and the monsoon rainforests of northern Australia (see McKenzie et al. 1991; Bowman 1992; Fensham 1995 for references). Despite the plethora of recent publications only Russell–Smith et al. (1993) provide a detailed description of a single rainforest type and none of these studies provides a description of the structure and floristics of an individual rainforest area.

Study area

Forty Mile Scrub National Park, 18°08'S 144°50'E, approximately 140 km due west from the coastal town of Cardwell in north Queensland (Fig. 1) is a classic example of inland dry rainforest vegetation (Webb & Tracey 1981; Stocker & Unwin 1986). Forty Mile Scrub National Park includes one of the larger areas of the fragmented dry rainforest archipelago in the vast expanse of eucalypt savanna and acacia scrub that characterise subcoastal tropical Australia. Site data from Forty Mile Scrub was included in two (sub-groups 4b and 6c) out of 16 segments of the floristic continuum represented by the rainforest of inland Queensland between latitudes 17°00' to 23°26.5'S that were surveyed by Fensham (1995).

Mean annual rainfall at the nearest long-term weather station, Mount Surprise (50 km to the W), is 803 mm, where about 80% of the rain falls between December and March (105 years of record; Bureau of Meteorology 1988). Between 1983 and 1992 complete rainfall records are available for six years but were unavailable for 1983, 1984, 1989 and 1991 (Bureau of Meteorology unpublished data). 1986 was the only year with above-average rainfall and total annual rainfall was only 398 and 555 in 1990 and 1991 respectively. Mean daily maximum temperature is 35.4°C in November and mean daily minimum temperature is 9.5°C in July (Bureau of Meteorology 1988).

Physical setting

Incised water courses are absent throughout the dry rainforest and all quadrats surveyed in this study had slopes of less than 5%. The main massif of dry rainforest (Fig. 1) is restricted to deeply weathered basalt soils of the McBride province (Isbell et al. 1976). The O-horizon is less than 2 cm deep and the dark reddish brown (5YR 3/3) clay loam A-horizon extends beyond 50 cm on the basalt soils (Fensham et al. 1994). The northwesterly patch of dry rainforest occurs on soils derived from lateritic substrates.

Methods

The largest patch of dry rainforest at Forty Mile Scrub National Park is 2380 ha and was the site of the following quadrat-based study from which the structural description was developed. A large portion of the dry rainforest at Forty Mile Scrub is severely degraded by the proliferation of the exotic shrub lantana (*Lantana camara*) and the incursion of fire (Fensham et al. 1994). These phenomena are probably the result of structural damage (Fensham et al. 1994). This project seeks to describe dry rainforest in relatively natural condition so quadrats were restricted to those areas of the rainforest where there was little (< less than 5000 plants per ha) or no lantana (Fig. 1).

Sampling was conducted in October and November 1992, using fifty 10 × 10 m quadrats spaced every 100 m along seven transects (Fig. 1).

In each quadrat the following were recorded: a) the diameter at breast height of all native trees and shrubs greater than 3 m tall; b) the identity of all plant species, except herbaceous ephemerals and grasses which could not be consistently identified during

the sampling period (taxonomic authorities follow Henderson 1994); c) an estimate of percentage canopy cover (as per Walker & Hopkins 1990) of trees greater than 4 m above ground; d) an estimate of the percentage cover of rock.

In a 1 m strip around the perimeter of each quadrat the following were recorded: e) the number and identity of all native shrubs and trees, greater than 50 cm tall and less than

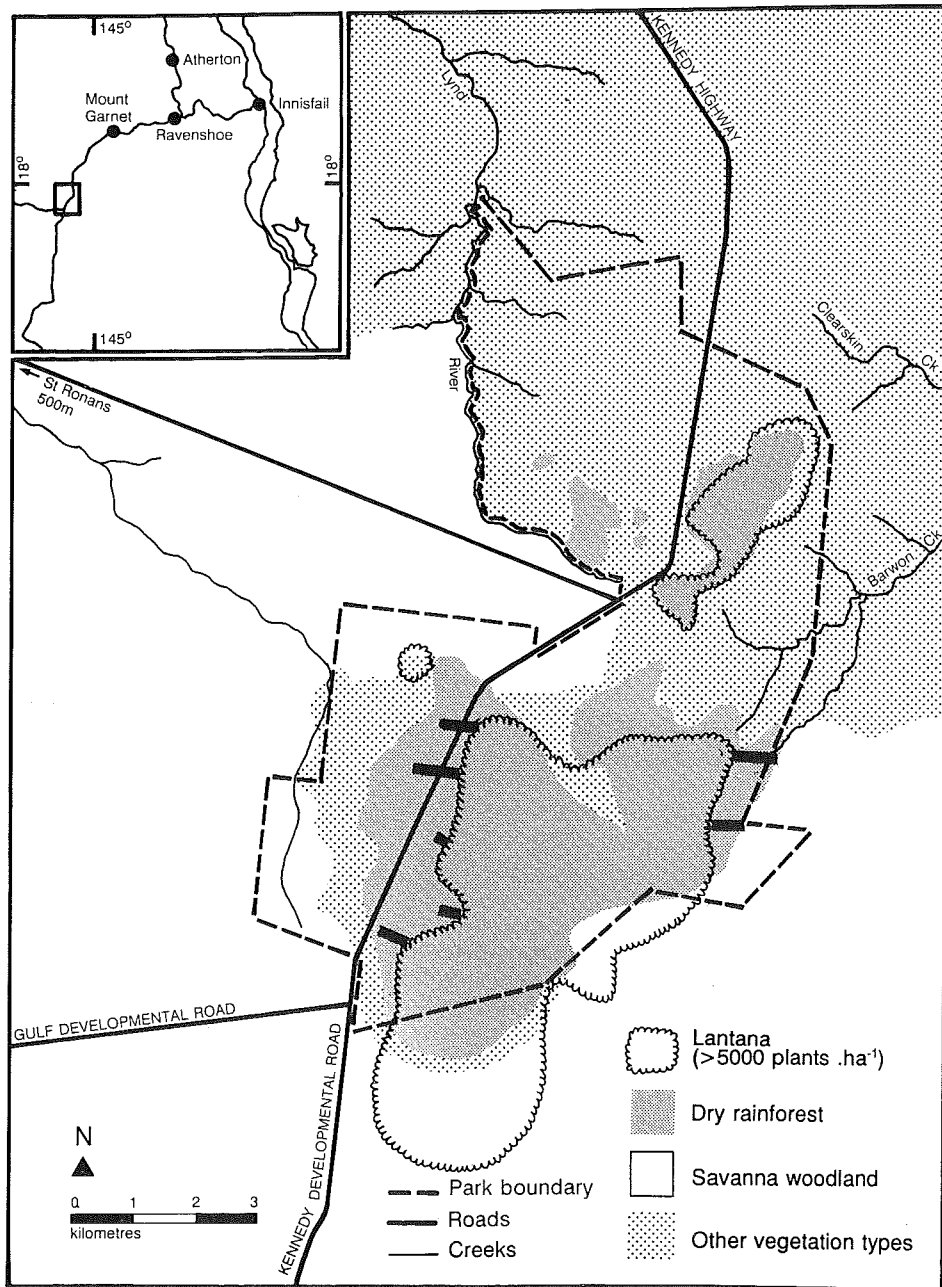


Fig. 1. Locality map showing vegetation types and position of transects as thick black lines.

3 m that have the potential to achieve greater than 2 m in height; and f) the number and identity of all native woody plants less than 50 cm tall.

A soil sample collected from between 2 and 10 cm depth from the centre of each quadrat was analysed for electrical conductivity using a TPS LC84 meter and pH using a TPS LC80 meter (TPS Pty Ltd, Brisbane). The distance of each plot to the edge of the rainforest was determined from aerial photography (1: 20 000).

Vascular plant species were also recorded during eight hours of foot traverse in the largest rainforest patch and two hours in the two next largest rainforest blocks (Fig. 1). Two hours of foot traverse in the large patch was conducted after considerable rain which had prompted growth and flowering of the ephemeral ground layer.

Analytical methods

All data were stored, manipulated and ordinated using the DECODA software (Minchin 1990). The non-metric multi-dimensional scaling technique (KYST) was performed in one dimension because of the monotony of substrate and vegetation, using default settings and presence-absence data.

Relationships between the ordination scores, the basal area of individual tree species and the measured environmental variables were tested using Spearman's rank correlation coefficients.

Stand structure histograms were prepared for the five most frequent tree species and for all species whose mature individuals are typically greater than 3 m tall.

Results

General description

The surface of the basaltic soils generally have low rock cover although slightly raised ridges occur throughout the dry rainforest with up to 90% rock cover (Table 1). Surface soils are neutral and pH varies between 6.0 and 7.5 (Table 1).

Existing checklists of plants for this area (Anon 1961; Kahn & Lawrie 1987) are out of date and difficult to reconcile with current names. An updated checklist is provided in Appendix 1; 151 native vascular plant species were recorded in the rainforest at Forty Mile Scrub National Park. Euphorbiaceae (12 species), Malvaceae (8 species) and Rubiaceae (8 species) are the largest families. Trees constitute 36% of the native taxa, 10% are small trees, 7% shrubs, 7% subshrubs, 11% vines, 25% herbs and 5% ferns (see Appendix 1 for lifeform definitions). Ninety-six percent of the native trees, shrubs and vines known from the scrub are known from within 1 km of the Queensland coast. In contrast, for the inland north Queensland dry rainforests as a whole, 87% of the species in those lifeform groups were not known from the Queensland coast (Fensham 1995).

The rainforest generally has greater than 50% canopy cover (Table 1). Table 2 shows the basal area, stem density and frequency of occurrence of the most common tree species

Table 1. Summary of environmental values in 50 dry rainforest 10 × 10 m quadrats at Forty Mile Scrub

	> 4 m canopy cover (%)	rock cover (%)	pH	conductivity (mS cm ⁻²)	distance to savanna (km)	KYST1
Minimum value	20	0.0	6.0	0.01	0.0	0.00
Mean value	53	9.8	6.8	0.10	0.624	0.59
Maximum value	95	90.0	7.5	0.30	2.0	1.52

Table 2. Percentage frequency, basal area and number of stems for all plants sampled greater than 1.4 m high. Only species occurring in five or more quadrats are included

Species	Sampled frequency (%)	Basal area (m ² ha ⁻¹) (ha ⁻¹)	number of stems
<i>Acacia aulacocarpa</i>	38	0.9723	38
<i>Acronychia laevis</i>	14	0.2866	38
<i>Alectryon connatus</i>	80	1.0335	162
<i>Alphitonia excelsa</i>	30	0.0906	6
<i>Antidesma parvifolium</i>	12	0.0328	6
<i>Austromyrtus</i> sp. (Forty Mile Scrub G.C. Stocker 1785)	62	1.1832	262
<i>Breynia oblongifolia</i>	68	0.0088	16
<i>Briedelia leichhardtii</i>	52	0.8681	54
<i>Canthium</i> sp. R.J. Fensham 632	46	0.0776	74
<i>Canthium vacciniifolium</i>	66	0.0349	38
<i>Carissa ovata</i>	88	0.0028	8
<i>Citriobatus spinescens</i>	64	0.1012	40
<i>Cupaniopsis anacardioides</i>	10	0.1855	6
<i>Denhamia oleaster</i>	56	0.5455	68
<i>Diospyros humilis</i>	80	0.6987	104
<i>Drypetes deplanchei</i>	36	2.3655	56
<i>Ehretia membranifolia</i>	22	0.3038	36
<i>Erythroxylum australe</i>	28	0.6385	26
<i>Ficus platypoda</i>	10	0.4560	8
<i>Flueggea leucopyros</i>	20	0.0303	8
<i>Geijera salicifolia</i>	72	0.7938	102
<i>Notelaea microcarpa</i>	78	3.5724	714
<i>Ozothamnus cassinioides</i>	60	0.1643	44
<i>Pleiogynium timorense</i>	14	0.4556	14
<i>Psychotria daphnoides</i>	26	0.0000	0
<i>Rapanea variabilis</i>	22	0.0203	40
<i>Senna surratensis</i> subsp. <i>surratensis</i>	10	0.0002	2
<i>Siphonodon australis</i>	18	0.6506	32
<i>Strychnos psilosperma</i>	52	3.4922	138
<i>Turraea pubescens</i>	34	0.0052	12
Total species		21.1295	2236

occurring in sizes greater than 1.4 m high. There was an average of 11,155 seedlings and saplings (< 3 m high) per ha. The most continuous canopy layer is 5–7 m high and *Notelaea microcarpa* is the most dominant species within this layer. Other common tree species in this layer are *Alectryon connatus*, *Austromyrtus* sp. (Forty Mile Scrub G.C. Stocker 1785), *Drypetes deplanchei*, *Geijera salicifolia* and *Strychnos psilosperma*. Dry rainforest emergents protrude from the closed canopy to a height of between 8 and 15 m and include the species *Ailanthus triphysa*, *Brachychiton australis*, *Pleiogynium timorensis* and *Siphonodon australis*. Emergents of these relatively tall rainforest species > 20 cm dbh were recorded at a density of 26 trees per ha. Mature individuals of *Eucalyptus crebra*, *Eucalyptus erythrophloia* and *Eucalyptus tereticornis* to 20 m tall, species dominant in savanna vegetation surrounding the rainforest, are also emergent in some areas.

Diospyros humilis is common as a spreading small tree under the closed canopy of the forest, while *Carrisa ovata* and *Canthium vacciniifolium* are spiny sclerophyllous shrubs in the understorey. The ephemeral ground layer has less than 5% cover following rain, with herbs and resurrection ferns in the family Sinopteridaceae (listed in Appendix 1) having sporadic distribution.

Two native species, *Margaritaria dubium-traceyi* and *Cyperus isabellinus*, were only recorded in the northwestern rainforest patch on lateritic substrate and not from the other surveyed patches on basalt.

Eight exotic species were recorded as naturalised in the forest. The shrub *Lantana camara* has infested a large proportion of the rainforest (Fensham et al. 1994) and the annual daisy *Ageratum conyzoides* is frequent in some areas following rain. The vine *Solanum seaforthianum* is common in some areas, while the other exotic species have only limited distribution in the rainforest.

Ordination

The KYST ordination axis was negatively correlated with rock cover and pH (Table 3). Thus variations in edaphic conditions may have some control over the relatively subtle vegetation patterns within the dry rainforest. However, the basal areas of only two of 13 common tree species had weak ($0.01 < P < 0.05$) correlations with rockiness (Table 3) and the abundance of none of nine small trees and shrubs showed any significant relationship with rockiness (Table 4; $P > 0.05$). The basal areas of four common tree species (Table 3) and the abundances of three small tree and shrub species (Table 3) were significantly ($P < 0.05$) correlated with the relatively minor variations in surface soil pH. The basal areas of seven of the common tree species and four of the common small tree and shrub species were not correlated to any measured environmental factor (Table 3 and 4).

The KYST ordination axis was also negatively correlated with the distance from the rainforest boundary although the basal area of no individual tree species was correlated with this factor. A significant negative correlation between the abundance of the small tree species *Rapanea variabilis* with the distance from the edge of the rainforest (Table 4) is indicative of the ecotonal habitat of this species.

Size class

The size class histogram for all tree species provides an indication of the overall structure of the forest (Fig. 2). The histogram reveals declining densities of trees as size classes increase. However, this histogram sheds little light on regeneration patterns in this particular dry rainforest because the majority of individuals in the small size classes are individuals of two tree species *Diospyros humilis* and *Turraea pubescens* that are only rarely represented in larger size classes. *Alectryon connatus* has the highest proportion (45.2%) of seedlings (< 50 cm high) relative to the other common species (Fig. 2). Low densities of small size classes are particularly marked for *Austromyrtus* sp. (Forty Mile Scrub G.C. Stocker 1785), *Notelaea microcarpa* and *Strychnos psilosperma* (Fig. 2). These species have less than 13% seedlings and less than 26% seedlings and saplings (> 50 cm high; < 300 cm high) in combination.

Table 3. Spearman's rank correlation coefficients between basal area of tree species, environmental variables and ordination scores. Only species occurring in ten or more quadrats are included

	> 4 m canopy cover	rock cover	pH	conductivity	distance to savanna	KYST1
<i>Acacia aulacocarpa</i>	NS	-0.34*	-0.43**	NS	NS	NS
<i>Austromyrtus</i> sp. (Forty Mile Scrub G.C. Stocker 1785)	NS	NS	0.34*	0.30*	NS	NS
<i>Canthium</i> sp. (R.J. Fensham 632)	NS	NS	0.42**	NS	NS	-0.47***
<i>Drypetes deplanchei</i>	0.50***	NS	NS	NS	NS	NS
<i>Strychnos psilosperma</i>	NS	0.33*	NS	0.33*	NS	NS
<i>Turraea pubescens</i>	NS	NS	0.35*	NS	NS	-0.32*
KYST1	NS	-0.29*	-0.36**	NS	-0.29*	

Tree species with no significant relations to measured factors ($P > 0.05$): *Alectryon connatus*, *Alphitonia excelsa*, *Denhamia oleaster*, *Diospyros humilis*, *Ehretia membranifolia*, *Geijera salicifolia*, *Notelaea microcarpa*

*** $P < 0.001$; ** $P < 0.01$; * $P < 0.05$; NS $P > 0.05$

Table 4. Spearman's rank correlation coefficients between densities of small tree and shrub species, environmental variables and ordination scores. Only species occurring in ten or more quadrats are included

	> 4 m canopy cover	rock cover	pH	conductivity	distance to savanna	KYST1
<i>Breynia oblongifolia</i>	NS	NS	0.32*	NS	NS	NS
<i>Briedelia leichhardtii</i>	NS	NS	0.32*	NS	NS	NS
<i>Canthium vacciniifolium</i>	NS	NS	NS	NS	NS	0.40**
<i>Ozothamnus cassinioides</i>	NS	NS	-0.36*	NS	NS	NS
<i>Rapanea variabilis</i>	NS	NS	NS	NS	-0.36*	NS

Small tree and shrub species with no significant relations to measured factors ($P > 0.05$): *Carissa ovata*, *Citriobatus spinescens*, *Flueggea leucopyros*, *Psychotria daphnoides*

*** $P < 0.001$; ** $P < 0.01$; * $P < 0.05$; NS $P > 0.05$

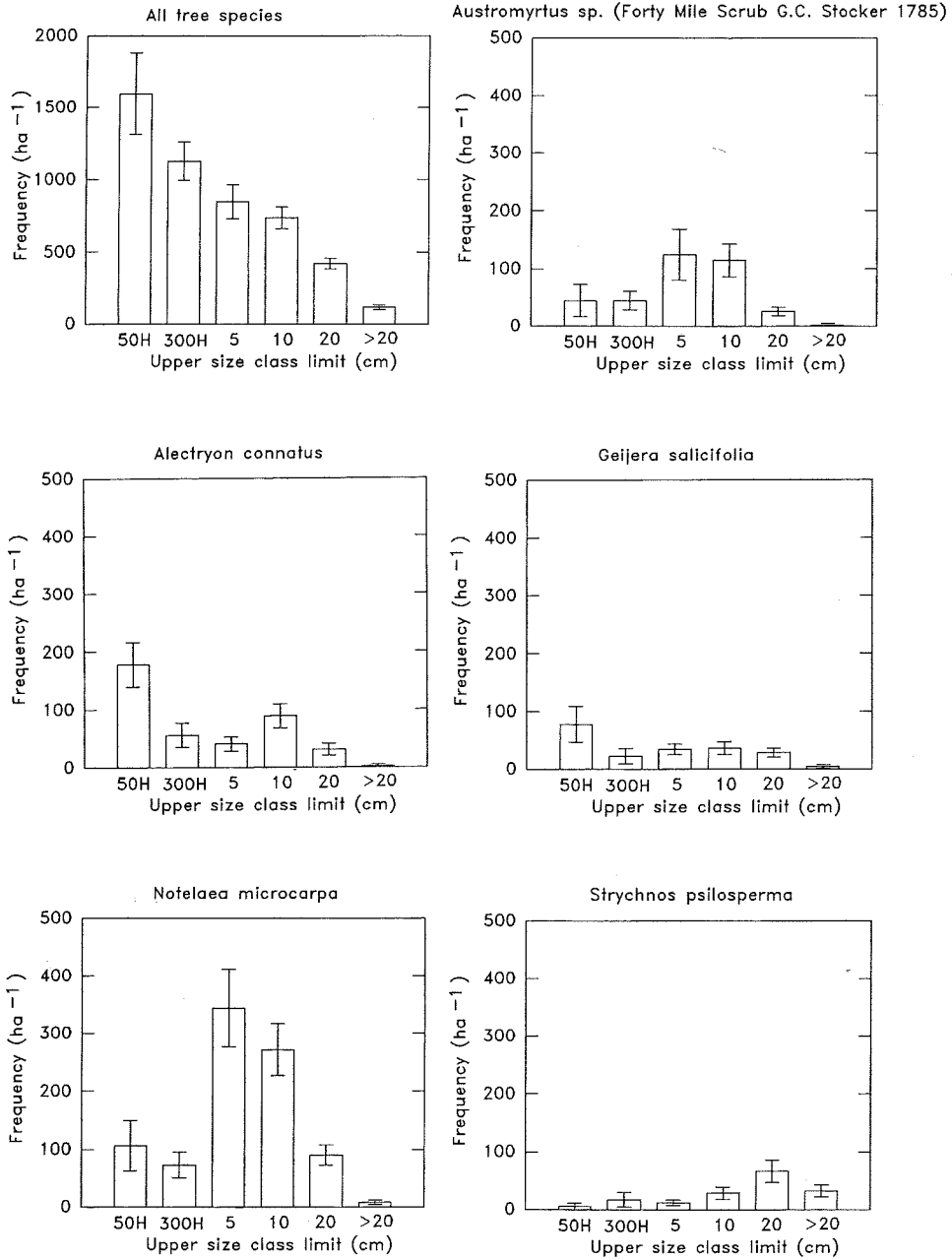


Fig. 2. Frequency/size class histograms for all tree species (mature plants > 5m high) and the five most abundant tree taxa. H = height and other values represent diameter at breast height.

Discussion

There are studies that present stand structure from analogous closed tropical forests elsewhere in the dry tropics (e.g. Dittus 1977; Murphy and Lugo 1986). However, most studies do not include data on seedling and sapling densities or cannot be related to unit area. I was unable to locate any studies that provide complete stand structure for individual species in dry rainforest. Bowman and Fensham (1991) present total densities (all woody plants less than 1.5 m high) between 45–50,000 per ha for monsoon rainforest at Weipa in far north Queensland. The numbers for woody plants < 3 m high presented here for Forty Mile Scrub are between 4 and 5 times lower than in analogous vegetation at Weipa. Russell-Smith et al. (1993) record mean seedling densities (< 20 cm high) of between 2200 and 18,500 per ha in *Allosyncarpia ternata* dominated rainforest types on the Arnhem Land Plateau in the Northern Territory. These values are between 1.4 and 11.5 times higher than for seedlings (< 50 cm high) densities in Forty Mile Scrub. Weipa and the Arnhem Land Plateau study area of Russell-Smith et al. (1993) have strongly seasonal mean annual rainfalls of 2250 mm, and 1200–1550 mm pa respectively. These values are, for Weipa 2.8 times higher, and for the Arnhem Land Plateau between 1.5 and 1.9 higher than Forty Mile Scrub. These trends may indicate that seedling densities increase with mean soil moisture values in rainforest vegetation on seasonally dry substrates.

Sukumar et al. (1992) measured about 5000 stems per ha for 1–2.5 cm dbh stems in deciduous forest in southern India. Although no data are provided, they note that many species including common dominants are represented by a general lack of the smaller size classes. The decade preceding this study was marked by below average rainfall (see above) and it appears that the regeneration of many species in dry rainforest may be a phasic event. Such an event may coincide with a series of high rainfall years perhaps only once every few decades. However, the details of seedling establishment and recruitment and the rates of such processes in dry rainforest will remain a mystery until further studies are complete.

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Appendix 1

Vascular plant species list for dry rainforest at Forty Mile Scrub. Species found only at disturbed edges of rainforest (i.e. along the highway) or confined to the dry rainforest ecotone are not included. Undescribed species where the bracketed reference is includes a location (e.g. *Sida* sp. Greenvale R.J. Fensham 1150) are recognised by BRI, other undescribed species identified simply by a collecting number (specimens are held at BRI) are awaiting confirmation of their status as distinct taxa).

f fern

h herb (non-woody plant)

v plants with long stems without intrinsic means of support

ss sub-shrub (mature plants marginally woody; less than 1 m tall)

s shrub (woody; mature plants less than 3 m tall)

st small tree (woody; mature plants 3–5 m tall)

t tree (woody; mature plants > 5 m tall)

* exotic

PTERIDIOPHYTA

Ophioglossaceae

Ophioglossum reticulatum f

Polypodiaceae

Platynerium veitchii f

Pyrrosia rupestris f

Sinopteridaceae

Cheilanthes nudiuscula f

Cheilanthes distans f

Cheilanthes sieberi f

Doryopteris concolor f

GYMNOSPERMAE

Cupressaceae

Callitris intratropica t

ANGIOSPERMAE

Acanthaceae

Hypoestes floribunda h

Pseuderanthemum variabile h

Rostellularia adscendens h

Amaranthaceae

Deeringia amaranthoides s

Anacardiaceae

Euroschinus falcata t

Pleiogynum timorense t

Annonaceae

Melodorum leichhardtii t

Apiaceae

Hydrocotyle acutiloba h

Apocynaceae

Alyxia ruscifolia s

Carissa ovata s

Parsonsia lanceolata v

Parsonsia plaesiophylla v

Araliaceae

Polyscias elegans t

Asclepiadaceae

*Cryptostegia grandiflorum** v

Cynanchum bowmanii v

Gymnema pleiadenium v

Sarcostemma viminale subsp. *brunonianum* v

Secamone elliptica v

Asteraceae

*Ageratum conyzoides** h

*Conyza bonariensis** h

Lagenifera sp. (R.J. Fensham 1113) h

Olearia canescens s

Ozothamnus cassinioides st

*Parthenium hysterophorus** h

Vernonia cinerea h

Bignoniaceae

Pandorea pandorana v

Boraginaceae

Cordia dichotoma st

Ehretia membranifolia t

Trichodesma zeylanica h

Brassicaceae

Cardamine hirsuta h

Caesalpiniaceae

Senna barclayana s

Senna surratensis subsp. *retusa* s

Senna surratensis subsp. *surratensis* s

Capparaceae

Capparis arborea t

Celastraceae

Cassine melanocarpa t

Denhamia oleaster t

Denhamia pittosporoides t

Maytenus cunninghamii t

Maytenus disperma t

Siphonodon australis t

Commelinaceae

Commelina cyanea h

- Convolvulaceae
Ipomoea saintronanensis v
- Cyperaceae
Cyperus dietrichiae h
Cyperus gracilis h
Cyperus isabellinus h
Scleria macaviensis h
- Ebenaceae
Diospyros humilis t
- Erythroxylaceae
Erythroxylum australe st
- Euphorbiaceae
Antidesma parvifolium st
Breynia oblongifolia st
Briedelia leichhardtii st
Claoxylon tenerifolium t
Croton arnhemicus t
Drypetes deplanchei t
Fleuggea leucopyrus st
Fluggea virosa subsp. *melanthesioides* st
Mallotus philippensis t
Margaritaria dubium-traceyi t
*Phyllanthus debilis**ss
Phyllanthus similis s
Phyllanthus novae-hollandiae t
- Fabaceae
Crotalaria verrucosa h
- Hernandiaceae
Gyrocarpus americanus t
- Lamiaceae
Plectranthus parviflorus h
- Lauraceae
Cassytha pubescens v
- Liliaceae
Dianella caerulea h
- Loganiaceae
Strychnos axillaris t
- Loranthaceae
Amyema congener h
Dendrophthoe homoplastica h
- Malpighiaceae
Rhyssopterys timorensis v
- Malvaceae
Abutilon oxycarpum ss
Abutilon indicum st
Hibiscus sturtii ss
Hibiscus vitifolius ss
Malvastrum americanum ss
Melhania brachycarpa ss
Sida sp. (Greenvale R.J. Fensham 1150) ss
Sida subspicata ss
- Meliaceae
Melia azedarach t
Turraea pubescens t
- Menisperiaceae
Stephania japonica v
- Mimosaceae
Acacia aulacocarpa t
- Moraceae
Ficus opposita t
Ficus platypoda t
- Myrsinaceae
Rapanea variabilis st
- Myrtaceae
Austromyrtus sp.
 (Forty Mile Scrub G.C. Stocker 1785) t
Eucalyptus crebra t
Eucalyptus erythrophloia t
Eucalyptus tereticornis t
- Oleaceae
Notelaea microcarpa t
Olea paniculata t
- Orchidaceae
Cymbidium canaliculatum h
Dendrobium bowmanii h
Dendrobium monophyllum h
Dendrobium linguiforme h
Saccolabiopsis armitii h
Sarcochilus minutiflos h
- Oxalidaceae
Oxalis perrenans h
- Passifloraceae
*Passiflora foetida** v
- Piperaceae
Peperomia blanda var. *floribunda* h
- Pittosporaceae
Citriobatus spinescens st
Pittosporum rhombifolium t
- Plumbaginaceae
Plumbago zeylanica h
- Poaceae
Ancistrachne uncinulata h
Aristida gracilipes h
Arthrargrostis deschampsoides h
Digitaria minima h
Lepturus sp.
 (Chillagoe M. Godwin C2576) h
Oplismenus aemulus h
Panicum trichoides h
- Ranunculaceae
Clematis pickeringii v
- Rhamnaceae
Alphitonia excelsa t
- Rubiaceae
Canthium odoratum t
Canthium sp. (R.J. Fensham 632) t
Canthium vacciniifolium s
Larsenaikia ochreatea t
Mitracarpus hirtus h
Pavetta australiensis st
Psychotria daphnoides var. *angustifolia* st
Spermacoce sp. (R.J. Fensham 1097) h
- Rutaceae
Acronychia laevis t
Geijera salicifolia t
Zanthoxylum brachyacanthum t

Santalaceae

- Exocarpos latifolius* t
- Santalum lanceolata* t

Sapindaceae

- Alectyron connatus* t
- Cupaniopsis anacardioides* t
- Dodonaea lanceolata* st

Sapotaceae

- Planchonella cotinifolia* t

Simaroubaceae

- Ailanthus triphysa* t

Smilacaceae

- Eustrephus latifolius* v

Solanaceae

- Solanum cookii* ss
- Solanum seaforthianum** v
- Solanum stelligerum* ss

Sterculiaceae

- Brachychiton australis* t
- Brachychiton chillagoensis* t
- Waltheria indica* ss

Tiliaceae

- Grewia papuana* st
- Grewia retusifolia* s

Ulmaceae

- Trema tomentosa* st

Urticaceae

- Laportea interrupta* h

Verbenaceae

- Clerodendrum tomentosum* t
- Clerodendrum floribundum* t
- Lantana camara** s
- Premna acuminata* t
- Vitex melicope* t

Violaceae

- Hybanthus stellarioides* h

Vitaceae

- Cayratia trifolia* v
- Cissus oblonga* v
- Cissus opaca* v
- Cissus reniformis* v