

## Flora of the Bungle Bungle area

by

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### VEGETATION DESCRIPTIONS OF FLORISTIC GROUPS IDENTIFIED FOR THE BUNGLE BUNGLE AREA

These floristic groups are defined from analysis of data collected in the 150 quadrats. For labelling, they are identified by the dominant species of tree, shrub and grass layers.

Each of our floristic groups is related to the groupings recognized by Forbes and Kenneally (1986).

1. *Livistona* sp. Open Forest - *Acacia holosericea* - *Germania truncatiglumis*.

Site 8

No. of quadrats: 5

Sheltered sandstone gorges of the Osmand Valley with permanent to semi-permanent watercourses support closed to open forest. The canopy height is 14-20 m with the dominant tree species being *Livistona* sp., *Melaleuca leucadendra*, *Syzygium angophoroides* and *Euodia elleryana*. The shrub layer is variable, ranging from poorly developed to dense, with *Acacia holosericea*, *A. tumida*, *Melastoma polyanthum*, *Grevillea agrifolia*, *Leptospermum parviflorum* and *Bossiaea bossiaeoidea* being characteristic. The ground layer varies with substrate. The rocky stream bed has occasional tussocks of *Germania truncatiglumis*, *Arundinella nepalensis* and *Cymbopogon procerus*. The sedge *Fimbristylis pauciflora* is common. The sandy banks are covered with well developed hummocks of *Triodia microstachya*.

The sheltered seepage areas of the sandstone cliffs support a variety of ferns including *Nephrolepis arida*, *Lygodium microphyllum* and *Dicranopteris linearis*. The clubmoss *Lycopodium cernuum* is restricted to the damp sands of these incised gullies, along with the herbs *Eriocaulon setaceum*, *Utricularia caerulea* and *Drosera* sp. The vines *Marsdenia cinerascens* and *Tylophora flexuosa* are occasional.

This community is restricted to the Wickham Land System and is comparable to Forbes and Kenneally 1.4 (sheltered gullies of streams in Osmand Valley and surrounds).

2. *Eucalyptus ptychocarpa* Forest - *Pandanus spiralis* - *Heteropogon contortus*.

Sites 7, 8

No. of quadrats: 5

This community occurs on flats and depressions associated with Osmand Creek on soils ranging from sand to loam. The canopy height is 10-18 m and the dominant tree species are *Eucalyptus ptychocarpa* and *Melaleuca leucadendra* with occasional *Timonius timon*, *Nauclea orientalis* and *Brachychiton diversifolius*. *Pandanus spiralis* forms a lower tree layer.

In the Osmand Valley these sites typically support an understorey of *Cycas pruinosa* with a grass layer of *Arundinella nepalensis*, *Heteropogon contortus* and *Germania truncatiglumis*. Wetter sites occurring downstream on Texas Downs Station have an understorey of *Acacia holosericea*, *Distichostemon hispidus* and *Fleuggea virosa* with a ground layer of *Cyclosorus interruptus*, *Fuirena ciliaris* and *Triodia microstachya*. Sedges are characteristic of the ground layer, with *Cyperus polystachyos*, *Fuirena umbellata*, *Schoenoplectus mucronatus* and *Scleria rugosa* recorded only in this community.

Adjacent permanent pools supported several rarely recorded species including the aquatic herbs *Aponogeton elongatus* and *Nymphaea violaceae*, the fern *Ceratopteris thalictroides* and *Pandanus aquaticus*.

This community is restricted to the Wickham Land System and is referred to by Forbes and Kenneally as 2.1 (low-lying plains adjacent to semi-permanent streams of the Osmand Valley) and 1.2 (permanent and semi-permanent streams of Osmand Valley and surrounds).

3. *Melaleuca leucadendra*/*Eucalyptus camaldulensis* Open Forest - *Aerva javanica* - *Aristida* spp.

Sites 5, 9

No. of quadrats: 4

This community occurs in the Nelson and Antrim Land Systems of the Ord River valley where the alluvial sands of the river levee support an open forest with a canopy height of 10-20 m. *Melaleuca leucadendra* and *Eucalyptus*

*camaldulensis* dominate with scattered *Terminalia platyphylla*, *Lophostemon grandiflorus*, *Ficus racemigera* and *Lysiphyllum cunninghamii*. *Terminalia bursarina* occurs as a dominant of low woodlands on the rocky floodplains.

The shrub layer is sparse and characterized by *Acacia farnesiana*. *Syzygium eucalyptoides* occurs as a small tree only in this community. The understorey comprises a rich assemblage of annual grasses, forbs and exotic species which colonize the alluvial sands after each flood. *Aerva javanica* is a colonizer species that occurs frequently. Grasses include *Aristida* spp., *Cenchrus* spp., *Cynodon dactylon*, *Digitaria bicornis*, *Enneapogon purpurascens* and *Heteropogon contortus*. Common forbs include *Cleome viscosa*, *Indigofera linifolia* and *Portulaca* sp. Species recorded only from this community include the grasses *Xerochloa laniflora*, *Sorghum laxiflorum* and *Chloris inflata* and the forbs *Bergia trimera*, *Sida acuta*, *Cardiospermum halicacabum*, *Trianthema triquetra* and *Tribulus terrestris*.

Forbes and Kenneally describe a similar community, 1.3 (Ord River at Blue Holes).

4. *Melaleuca leucadendra* Open Forest - *Acacia eriopoda* - *Aristida hygrometrica*.

Sites 2, 7, 8

No. of quadrats: 18

The Osmand Creek flows through a broad valley in the Wickham and Antrim Land Systems forming a complex of permanent and ephemeral watercourses. The alluvial sands of the permanent watercourses support a band of open forest with a canopy height of 16 - 20 m, dominated by *Melaleuca leucadendra* with occasional *Eucalyptus camaldulensis* and *Terminalia platyphylla*. Ephemeral watercourses and river levees are more open with a woodland of *Eucalyptus papuana*, *E. confertiflora* and *Lysiphyllum cunninghamii*. The shrub layer is sparse and characterized by *Acacia eriopoda*, *A. holosericea*, *A. tumida* and *Flueggea virosa*. The grassy understorey is dominated by *Aristida* spp., *Heteropogon contortus* and *Cenchrus ciliaris*. Subshrubs such as *Sida* spp., *Crotalaria* spp., *Hibiscus* spp. and *Waltheria indica* and the herbs *Euphorbia* spp., *Portulaca* sp. and *Ipomea* sp. occur frequently.

This community recorded the highest number of plant species per quadrat, (mean 39.7), including many exotic species such as *Datura inoxia*, *Parkinsonia aculeata*, *Calotropis procera*, *Cenchrus echinatus*, *Citrullus lanatus* and *Euphorbia hirta*.

Comparable to Forbes and Kenneally 2.2 (stream frontage).

5. *Lysiphyllum cunninghamii* Woodland - *Carissa lanceolata* - *Heteropogon contortus*.

Sites 6, 7, 8

No. of quadrats: 12

Drainage lines on plains and lower slopes of the Wickham Land System support woodlands with a canopy height of 8-12 m and dominated by *Lysiphyllum cunninghamii*, *Lophostemon grandiflorus*, *Eucalyptus chlorophylla* and *Melaleuca viridiflora*. The shrub layer is characterized by *Carissa lanceolata*, *Atalaya hemiglaucata* and *Acacia holosericea*. The tussock grasses *Heteropogon contortus*, *Eulalia fulva*, *Chrysopogon* sp. and *Eriachne festucacea* dominate the ground layer.

This community is associated with ephemeral watercourses and is heavily used by feral animals. Many sites are degraded. Forbes and Kenneally describe a similar community 1.1 (ephemeral streams on plains and broad valleys).

6. *Lysiphyllum cunninghamii* Low Woodland - *Acacia holosericea* - *Cenchrus ciliaris*.

Sites 3, 9

No. of quadrats: 13

This community occurs on the Nelson Land System on plains and river levees of the Ord River valley and is subject to severe degradation and erosion. Soils vary between loamy sand and sandy clay loams. *Lysiphyllum cunninghamii*, *Eucalyptus opaca* and *E. pruinosa* characterize the tree layer with a canopy height of 6-10 m, *Grevillea striata* and *Hakea arborescens* occur occasionally. Favourable sites on river levees occasionally support a forest of *Eucalyptus microtheca* with a canopy height of 18 m.

The shrub layer is generally poorly developed, although *Acacia farnesiana* can form dense thickets on heavier soils. The ground layer is dominated by the tussock grasses *Cenchrus ciliaris*, *Chrysopogon fallax*, *Bothriochloa ewartiana* and *Astrebla squarrosa*. Forbs are more frequent than in surrounding hummock grass communities and include *Corchorus* spp., *Heliotropium* sp., *Ptilotus* spp. and *Trianthema pilosa*. Termitaria are common.

Forbes and Kenneally describe a similar community, 3.4 (calcareous red earths).

7. *Acacia farnesiana* Open Shrubland - *Aerva javanica* - *Aristida* spp.

Sites 3, 5

No. of quadrats: 8

This community occurs in the Nelson and Antrim Land Systems of the Ord River valley. The fine clays and clay loams of these plains are severely eroded in places. The tree layer is virtually absent and a sparse tall shrub layer dominated by *Acacia farnesiana*, a species characteristic of disturbed areas, forms the canopy. Tussock grasses such as *Aristida holathera*, *A. inaequiglumis*, *Cenchrus ciliaris*, *C. echinatus*, *Enneapogon purpurascens*, *Chrysopogon* sp. and *Sporobolus australasicus* dominate the ground layer. There is a high density of forbs, the most common being *Sida* spp., *Cleome viscosa*, *Boerhavia* sp., *Crotalaria medicaginea*, *Heliotropium* sp., *Phyllanthus maderaspatensis* and *Rhynchosia minima*. The numerous annual grasses, forbs and increaser species such as the chenopod *Salsola kali* are all indicators of degradation. The original composition of these plains prior to the introduction of cattle and donkeys is uncertain. This community is comparable to Forbes and Kenneally 3.3 (black-soil plains).

8. *Eucalyptus collina* Woodland - *Acacia stipuligera* - *Triodia spicata*.

Sites 1, 10

No. of quadrats: 7

The sandplains surrounding the Bungle Bungle massif support a woodland of *Eucalyptus collina* with a canopy height of 12-16 m. There is a well-developed shrub layer dominated by *Acacia stipuligera*, *Grevillea refracta* and *Jacksonia odontoclada*. The ground layer is characterized by a hummock grass not previously recorded in the Kimberley, *Triodia spicata*. Tussock grasses such as *Aristida holathera*, *Eriachne obtusa* and *E. ciliata* occur occasionally between clumps of hummock grass.

This community occurs on the Buchanan Land System. It is included in Forbes and Kenneally 3.2 (sand plains surrounding Bungle Bungle massif).

9. *Eucalyptus collina* Woodland - *Acacia tumida* - *Plectrachne pungens*.

Site 1

No. of quadrats: 11

Woodlands of *Eucalyptus collina* with occasional *E. aff. papuana* occur on the sandy loams of the Buchanan plains and frontages. Ephemeral watercourses have a narrow band of *E. camaldulensis* lining their banks. Shrubs and small trees include *Acacia tumida*, *Corchorus sidioides*, *Tephrosia phaeosperma*, *Cassia venusta* and *Grevillea miniata*. The hummock grass *Plectrachne pungens* dominates the understorey, with *Triodia procera* occurring less frequently. Tussock grasses such as *Aristida holathera* and *Chrysopogon* sp. occur occasionally between clumps.

*Indigofera linifolia* is the dominant forb with *Ammannia auriculata*, *Bonamia linearis*, *Crotalaria incana*, *Indigofera hirsuta* and *Tribulopsis angustifolia* recorded only in this community.

This community is included in Forbes and Kenneally 3.2 (sandplains surrounding Bungle Bungle massif).

10. *Eucalyptus brevifolia* Open Woodland - *Cassia venusta* - *Plectrachne pungens*.

Sites 1, 2, 3

No. of quadrats: 11

This community occurs on sandstone breakaways in the Elder and Buchanan Land Systems. *Eucalyptus brevifolia* is the dominant tree with a canopy height of 8-14 m, *E. camaldulensis* and *Ventilago viminalis* occur occasionally in drainage lines. *Cassia venusta*, *Gossypium australe* and *Acacia eripoda* characterize the shrub layer. The ground layer is dominated by the hummock grasses *Plectrachne pungens* and *Triodia inutilis* with the tussock grasses *Aristida hygrometrica*, *Eriachne obtusa*, *Eragrostis* spp. and *Chrysopogon* spp., and the forb *Ptilotus fusiformis* occurring frequently. A new species of *Tephrosia* was collected on the sandstone breakaway at site 3 and the two forbs previously unrecorded in the Kimberley, *Ptilotus schwartzii* and *Streptoglossa decurrens*, were recorded only in this community.

Forbes and Kenneally did not describe this community.

11. *Hakea arborescens* Low Woodland - *Dodonaea polyzyga* - *Triodia wiseana*.

Site 6

No. of quadrats: 5

This community is restricted to limestone outcrops where the canopy height is typically low and sparse but on favourable sites may form low closed forests. Dominant trees are *Hakea arborescens*, *Eucalyptus opaca*, *Lysiphyllum cunninghamii*, *Santalum lanceolatum* and *Atalaya hemiglauca*, with occasional trees of *Celtis philippinensis*, *Premna acuminata* and *Vitex glabrata*.

The shrub layer is well developed and *Dodonaea polyzyga*, *Acacia acradenia* and *Carissa lanceolata* dominate. Large hummocks of *Triodia wiseana* occur on unburnt sites, often tangled with the vine *Cassytha capillaris*.

This community occurs on the Headley Land System and is comparable to Forbes and Kenneally 4.3 (limestone outcrops).

12. *Eucalyptus opaca* Low Open Woodland - *Grevillea pyramidalis* - *Triodia pungens*.

Sites 3, 5, 6, 7, 9

No. of quadrats: 14

A low open woodland dominated by *Eucalyptus opaca* and *Lysiphillum cunninghamii* with a canopy height of 5-9 m occurs on rocky undulating plains and lower slopes in the Antrim, Nelson and Wickham Land Systems.

Scattered small trees, mainly *Grevillea pyramidalis* and shrubs, principally *Acacia acradenia*, *Aervajavanica*, *Carissa lanceolata* and *Dodonaea polyzyga*, form the middle layer. The hummock grasses, *Triodia pungens* and *Triodia intermedia*, dominate the understorey. Soils are typically skeletal sandy clay loams. Forbes and Kenneally describe a similar community 3.1 (interfluves and undulating plains).

13. *Eucalyptus brevifolia* Low Open Woodland - *Acacia retivenia* - *Triodia intermedia*.

Sites 6

No. of quadrats: 5

This community is associated with sandstone hills and slopes of the Antrim Uplands. Soils are skeletal sandy clay loams. A sparse low tree layer of *Eucalyptus brevifolia* with a canopy height of 3-6 m occurs over a shrub layer of *Acacia retivenia*, *A. lycopodiifolia*, *Cochlospermum fraseri*, *Gossypium australe* and *Terminalia canescens*. The ground layer is dominated by the hummock grass *Triodia intermedia* with occasional *Triodia pungens*. The sedge *Bulbostylus barbata* and the annual grass *Sporobolus australasicus* occur commonly in the bare ground between hummocks.

This community had the lowest number of plant species per quadrat (mean 10.4) recorded for the survey. Forbes and Kenneally record a similar community 4.1 (rocky slopes) occurring on the Antrim, Dockrell and Wickham Land Systems.

14. *Eucalyptus cliftoniana* Low Woodland - *Cajanus* sp. - *Plectrachne pungens*.

Site 7

No. of quadrats: 6

A low woodland dominated by *Eucalyptus cliftoniana* occurs on the dissected sandstone slopes of the Osmand Range in the Wickham Land System. The canopy height is 5-10 m. *E. collina* and *Owenia vernucosa* occur occasionally. There is a well-developed shrub layer dominated by *Cajanus* sp., *Acacia gonocarpa*,

*A. lycopodiifolia*, *Corchorus sidioides*, *Grevillea refracta*, *Heliotropium epacrideum*, *Hibiscus leptoclada* and *Cochlospermum fraseri*. Hummock grasses dominate the understorey, mainly *Plectrachne pungens* with isolated hummocks of *Triodia procera*. The tussock grass *Eriachne ciliata* and the sedge *Cyperus* aff. *sexflorus* occur frequently on bare ground between hummocks. The shrub *Paratephrosia lanata* was recorded only in this community. No introduced species were recorded.

Forbes and Kenneally did not record this community.

15. *Eucalyptus aspera* Low Woodland - *Acacia eripoda* - *Triodia microstachya*.

Sites 4, 10

No. of quadrats: 3

A distinct community occurs in the gorges of the Bungle Bungle massif. The tree layer is sparse with a canopy height of 4-8 m and is characterized by *Eucalyptus aspera* and *E. brachyandra*. *Acacia eripoda* can form a tall shrub layer while the sparse undershrubs include *Calytrix exstipulata*, *Brucea javanica*, *Sarcostemma australe* and *Santalum lanceolatum*.

The precipitous gorge walls support *Ficus leucotricha*, *Grevillea psilantha* (type locality), *Pandorea* aff. *doratoxylon*, *Eriachne mucronata* and *Plectrachne* sp. nov. New species of *Lindernia* and *Steodia* are restricted to these sandstone walls. The sandy banks of the ephemeral watercourses support large hummocks of *Triodia microstachya*. The fern *Cheilanthes brownii* occurs in crevices. Several species of vine occur in these sheltered gorges including *Tylophora flexuosa*, *Tinospora smilacina* and *Stehania japonica*.

Permanent water can be found in rockholes in some gorges. The damp loamy sands surrounding these pools support a community of sedges, grasses and forbs not found in drier sites. Of particular interest is the daisy *Erigeron ambiguus*, a new record for Western Australia. Other species include the sedge *Cyperus holoschoenus*, the grass *Elytrophorous spicatus*, *Byblis liniflora*, *Eriocaulon cinereum*, *Centrolepis banksii* and *Monochoria cyanea*.

Forbes and Kenneally describe similar communities as 1.7 (chasm and cliffs) and 1.5 (ephemeral streams on the Bungle Bungle plateau).

16. *Eucalyptus cliftoniana* Low Open Woodland - *Acacia* spp. - *Triodia spicata*.

Sites 4, 10

No. of quadrats: 16

This community occurs predominantly on sandy loams of the Elder uplands of the Bungle Bungle massif. The tree layer is low and sparse, with a canopy height of 4-8 m, and dominated by *Eucalyptus cliftoniana* with occasional *E. collina*. *E. dichromophloia* occurs on rocky slopes and *E. cupularis* is restricted to the sandy ephemeral watercourses of this community. The shrub layer is well-developed, particularly along drainage lines and includes *Acacia gonocarpa*, *A. stipuligera*, *A. tumida*, *A. lycopodiifolia*, *Grevillea miniata*, *G. refracta* and *Jacksonia odontoclada*. *Triodia spicata* forms a dense ground layer with *Triodia microstachya* forming large hummocks on the sandy banks of ephemeral water courses. The tussock grass *Eriachne ciliata* occurs frequently in the bare ground between hummock grass clumps.

The only records of *Acacia* aff. *hippuroides*, *Cyperus zollingeri*, *Mirbelia viminalis* and *Tacca leontopetaloides* occurred here. This community recorded the highest percentage cover of shrubs and hummock grasses and no introduced plants were detected.

This community is described as 5.1 (Bungle Bungle plateau) by Forbes and Kenneally.

17. *Acacia* spp. Tall Shrubland - *Triodia spicata*.

Site 10

No. of quadrats: 7

The Buchanan Uplands at Piccaninny Gorge support a community of *Acacia* tall shrubland with a canopy height of 3-4 m. This community occurs on sandy soils on plains at the base of the Bungle Bungle massif. The tree layer is generally absent but occasional *Eucalyptus cliftoniana* may occur. Tall shrubs include *Acacia eriopoda*, *A. tumida* and *Grevillea byrnesii* with *A. stipuligera*, *A. gonocarpa* and *Jacksonia odontoclada* forming a lower shrub layer. *Triodia spicata* characterizes the ground layer with occasional *T. microstachya*, *Plectrachne pungens* and *Aristida hygrometrica*.

This community is described in part by Forbes and Kenneally 3.2 (sandplains surrounding Bungle Bungle massif).

## ANNOTATED PLANT CHECKLIST

The following annotated list contains all the taxa identified so far. It covers 616 species in which there are 17 ferns and fern allies, 1 gymnosperm and 598 flowering plants (157 monocotyledons and 441 dicotyledons). The monocotyledons are from 69 genera in 17 families, and the dicotyledons from 197 genera in 75 families. This list adds 244 species of vascular plants to the known flora of the Bungle Bungle area.

Genera and species are arranged alphabetically within families which follow Cronquist (1981). Species collected during this survey are followed by collection numbers. Initials refer to the collectors: KM (K.A. Menkhurst) and IDC (I.D. Cowie). These specimens are housed at either the Western Australian or Northern Territory Herbaria.

SR denotes a sight record only.

\* indicates species reported in Bungle Bungle area by Forbes and Kenneally (1986).

# indicates introduced species.

+ indicates a record from Northern Territory Herbarium collection. These have been checked for correct identification and their herbarium numbers are given.

(F&K.....) indicates an additional locality recorded by Forbes and Kenneally (1986).

(FoK) refers to Flora of the Kimberley (Kenneally 1989).

(FoCA) refers to Flora of Central Australia (Jessop 1981).

## PTERIDOPHYTA (Ferns and Fern Allies.)

### BLECHNACEAE

\* *Blechnum orientale* L. KM 728

Tufted rhizomic fern to 0.7 m. high. Only recorded from Winnama Gorge. In moist overhangs at base of cliff among closed forest.

### GLEICHENIACEAE

\* *Dicranopteris linearis* (Burm.f.) L. Underw. KM 853  
Scrambling fern. In shaded seepage areas of sandstone cliffs in Bream Gorge. (F&K Piccaninny Gorge.)

### HEMIONITIDACEAE

\* *Taenitis pinnata* (J.Sm.) Holtt. KM 832  
Rhizomic slender fern to 0.8 m. Restricted to sandstone walls in chasms of Bungle Bungle massif.

### LINDSAEACEAE

\* *Lindsaea ensifolia* Sw. KM 851  
Rhizomatic wiry fern to 0.5 m. At base of sandstone cliff at Winnama Gorge. (F&K Piccaninny Gorge.)

### LYCOPODIACEAE

*Lycopodium cernuum* L. KM 753  
Wiry erect fern, much branched with drooping tips. In damp loam between sandstone boulders at Bream Gorge.

## MARSILEACEAE

- \* *Marsilea mutica* Mett.  
Stoloniferous fern with floating and emergent leaves.  
(F&K Red Rock Creek.)

*Marsilea* sp. SR  
Erect fern beside stagnant waterhole, Blue Hole.

## OLEANDRACEAE

*Nephrolepis arida* D.L.Jones KM 869  
Rhizomatic, scaly fern. On sheltered sandstone cliff at  
Bream Gorge.

- \* *Nephrolepis hirsutula* (Forster) C.Presl. KM 707  
Rhizomatic fern to 1 m. On sheltered sandstone cliff at  
Winnama Gorge.

## PARKERIACEAE

- \* *Ceratopteris thalictroides* (L.) Brongn. KM 601  
Emergent aquatic. In stagnant pools near Mt. John and at  
Winnama Gorge. (F&K Osmand Valley.)

## PSILOTACEAE

- \* *Psilotum nudum* (L.) P.Beauv. KM 729  
Rhizomatic, branched fern with linear leafless stems. On  
sheltered sandstone wall at Winnama Gorge. (F&K  
Piccaninny Gorge.)

## SCHIZAEACEAE

- \* *Lygodium microphyllum* (Cav.) R.Br. KM 708  
Delicate climbing maidenhair fern. Ascending shrubs on  
sandstone cliffs among closed forest at Winnama Gorge  
and Bream Gorge. (F&K Piccaninny Gorge.)

## SINOPTERIDACEAE

- \* *Cheilanthes brownii* (Desv.) Domin. KM 597; IDC 848  
Tufted fern, short rhizome, fronds woolly. Common in  
sandstone crevices associated with the Bungle Bungle  
massif, occasional on surrounding sandplains.

*Cheilanthes hirsuta* (Poiret) Mett.  
Identified after publication of Forbes and Kenneally  
(1986).

- \* *Cheilanthes pumilio* (R.Br.) F.Muell.  
Tufted fern from short rhizome. (F&K Bungle Bungle  
massif and Red Rock Creek.)

- \* *Cheilanthes tenuifolia* (Burm.f.) Sw.  
Dark, finely dissected fern to 0.3 m. (F&K Piccaninny  
Gorge.)

- \* *Cheilanthes* sp.  
Tufted fern. (F&K Bungle Bungle Plateau.)

## THELYPTERIDACEAE

- \* *Cyclosorus interruptus* (Willd) H.Ito KM 689, 852  
Rhizomatic coarse fern to 1 m. In wet loamy soils beneath  
closed forest at Wulwuldji Spring and near Mt. John.

## SPERMATOPHYTA

### GYMNOSPERMAE

### CYCADACEAE

- \* *Cycas pruinosa* Maconochie KM 746  
Palm-like plant to 3 m, taller ones branched. Leaves blue-  
green. In sandy soils of seasonally wet areas in Osmand  
Valley and on sandstone hillsides of Osmand Plateau. Ripe  
fruits eaten only after grinding, leaching and baking  
(Scarlett 1985).

### ANGIOSPERMAE

### MONOCOTYLEDONAE

### APONOGETONACEAE

- \* *Aponogeton elongatus* F.Muell. ex Benth. KM 460, 622  
Aquatic with floating leaves and emergent inflorescences,  
flowers yellow. In permanent pools on Bungle Bungle  
Plateau and near Mt. John. (F&K ephemeral pools  
Piccaninny Gorge.)

### ARACEAE

- \* *Colocasia esculenta* (L.) Schott. KM 706  
Semi-aquatic with erect fleshy stems to 1 m. In organic  
soils of permanent watercourses beneath riparian closed  
forest at Winnama Gorge and Osmand Valley. Populations  
sterile at time of survey. Stem tubers eaten after cooking  
(Scarlett 1985).

### ARECACEAE

- \* *Livistona* sp.  
Palm 2 m high, leaves grey-green. (F&K Wulwuldji.)

*Livistona* sp. KM 678, 838  
Palm to 10m; trunk thick at base, with persistent leafbases,  
smooth and ringed above; inflorescence yellow, branched;  
fruit ripening black. Dominant in sandy soil of Bream  
Gorge, and in swampy loam at base of Wickham Land  
system outlier in southern Conservation Reserve (site 6).  
Probably the same species referred to above.

\* *Livistona* sp. 'Victoria River' *sensu* D.Jones (1984) KM 779

Palm to 20 m, trunk grey with prominent leaf scars; leaves grey-green; fruits spherical, ripening purple. In chasms and on cliffs of Bungle Bungle massif. Apical bud and upper stem eaten when cooked (Scarlett 1985).

#### BURMANNIACEAE

*Burmannia juncea* Sol. ex R.Br. KM 756

Erect herb to 0.2 m, winged fruit mauve. In wet sand beside permanent watercourse, Bream Gorge.

#### CENTROLEPIDACEAE

*Centrolepis banksii* (R.Br.) Roemer & Schultes KM 482

In moist sandy soil beside permanent waterhole of Bungle Bungle Plateau.

#### COMMELINACEAE

*Murdannia* sp. IDC 814

Erect herb to 0.5 m. On sandplains with *Eucalyptus collina* woodland at Bull Creek.

#### CYPERACEAE

\* *Bulbostylis barbata* (Rottb.) C.B.Clarke KM 549; IDC 941

Tufted small sedge. Common on rocky hillsides in skeletal soils between *Triodia* hummocks. (F&K Piccaninny Gorge.)

\* *Cyperus breviculmis* R.Br. IDC 856

Annual sedge, growing on moist sandy bank of ephemeral watercourses at Bull Creek and Osmand Creek. (F&K Piccaninny Gorge.)

\* *Cyperus conicus* (R.Br.) Boeckler IDC 817, 845, 929  
Perennial sedge. Moist sandy bank of ephemeral watercourses, occasional in Osmand Creek and tributaries. (F&K Piccaninny Gorge.)

\* *Cyperus cunninghamii* (C.B.Clarke) C.Gardner KM 538, 540; IDC 860

Tufted resinous sedge. Associated with rocky substrates on Bungle Bungle Plateau, Goosehole breakaway and ephemeral creeks surrounding the massif.

\* *Cyperus cuspidatus* Kunth  
(F&K Piccaninny Gorge.)

\* *Cyperus eleusinoides* Kunth  
Rhizomatous sedge. (F&K Osmand Valley.)

\* *Cyperus flaccidus* R.Br. vel aff.  
(F&K Piccaninny Gorge.)

*Cyperus haspan* L. KM 872

Erect sedge. In damp sand beside stagnant pool, Bream Gorge.

\* *Cyperus holoschoenus* R.Br. KM 550; IDC 863, 928  
Perennial sedge to 1 m. In moist sand of drainage lines on Bungle Bungle Plateau and surrounding sandplains.

\* *Cyperus microcephalus* R.Br. KM 545; IDC 861  
Perennial sedge. In rocky ephemeral watercourses at Bull Creek and Site 6. (F&K Piccaninny Gorge, Winnama Gorge.)

\* *Cyperus polystachyos* Rottb. KM 541, 717  
Tufted sedge. In damp sand beside permanent watercourse under closed forest near Mt. John and at Winnama Gorge.

\* *Cyperus pulchellus* R.Br. KM 539  
On Bungle Bungle Plateau. (F&K Piccaninny Gorge.)

*Cyperus* aff. *sexflorus* R.Br. KM 593  
Sedge in dissected sandstone near Mt. John.

\* *Cyperus sporobolus* R.Br.  
Erect sedge to 0.3 m. (F&K Winnama Gorge.)

\* *Cyperus squarrosus* L.  
(F&K Piccaninny Gorge.)

\* *Cyperus vaginatus* R.Br. KM 542, 543, 546; IDC 948  
Robust perennial sedge to 1 m. Common in damp sandy soils of major creeks. Stems used to clean wax from ears (Scarlett 1985).

*Cyperus zollingeri* Steudel KM 559  
Annual sedge with fibrous roots. In moist sand of sandstone gorge, Bungle Bungle Plateau.

\* *Eleocharis atropurpurea* Kunth  
(F&K Piccaninny Gorge.)

*Eleocharis geniculata* (L.) Roemer & Schultes KM 547  
Annual sedge. Ephemeral sandy watercourse beneath *Melaleuca leucadendra* forest, Osmand Creek.

*Eleocharis* sp. A (FoK) KM 871  
Perennial sedge. In permanent pool, Bream Gorge.

\* *Fimbristylis cinnamometorum* (M.Vahl) Kunth  
Tufted sedge. (F&K Winnama Gorge.)

\* *Fimbristylis depauperata* R.Br.  
(F&K Piccaninny Gorge.)

\* *Fimbristylis littoralis* Gaudich. IDC 865  
Annual sedge. In moist sandy bank of ephemeral watercourse, Bull Creek. (F&K Piccaninny Gorge.)

\* *Fimbristylis microcarya* F.Muell.  
(F&K Piccaninny Gorge.)

\* *Fimbristylis neilsonii* F.Muell. KM 571; IDC 905  
Annual sedge. In sandy ephemeral watercourses of Bungle  
Bungle sandplain and Goosehole breakaway.

\* *Fimbristylis nuda* Boeckler  
(F&K Piccaninny Gorge.)

*Fimbristylis oxystachya* F.Muell. KM 572  
In sandy soils of *Eucalyptus brevifolia* open woodland,  
Goosehole breakaway.

*Fimbristylis ? pauciflora* R.Br. KM 768  
Perennial sedge to 0.3 m, forming dense circular clumps  
in moist sand beside permanent watercourse, Bream  
Gorge.

\* *Fimbristylis rhyticarya* F.Muell.  
Recorded by Forbes and Kenneally as *F. acuminata*. (F&K  
Piccaninny Gorge.)

\* *Fimbristylis sphaerocephala* Benth.  
(F&K Winnama Gorge.)

\* *Fimbristylis tetragona* R.Br.  
Tufted sedge to 0.5 m. (F&K Osmand Valley.)

*Fimbristylis* sp. KM 574  
Glabrous perennial sedge. On sandy bank beside permanent  
watercourse beneath riparian forest near Mt. John.

\* *Fimbristylis* sp. KM 767  
Glabrous perennial sedge. In moist sandy loam beside  
permanent water course, Bream Gorge.

\* *Fuirena ciliaris* (L.) Roxb. KM 554, 555; IDC 855  
Annual sedge to 0.3 m. In loamy soils of permanent springs  
near Mt. John and at Site 6. (F&K Piccaninny Gorge.)

\* *Fuirena umbellata* Rottb. KM 551  
Perennial broad leaved sedge to 1 m. In swampy loam  
beneath riparian forest, near Mt. John. (F&K Osmand  
Valley.)

\* *Lipocarpa microcephala* (R.Br.) Kunth  
Annual sedge to 0.2 m. (F&K Winnama Gorge.)

\* *Rhynchospora affinis* W.Fitzg.  
(F&K Piccaninny Gorge.)

*Rhynchospora* sp. KM 548  
Annual sedge 4 cm high. In sandy soil beneath *Acacia*  
shrubland on Bungle Bungle Plateau.

\* *Schoenoplectus lateriflorus* (J.Gmelin) Lye  
Tufted sedge. (F&K ephemeral stream.)

\* *Schoenoplectus mucronatus* (L.) Palla ex Kerner KM  
552  
Perennial sedge with robust triangular stems. In damp soil  
beside permanent watercourse beneath riparian forest,  
near Mt. John. (F&K Osmand Valley.)

\* *Scleria brownii* Kunth IDC 796  
Perennial sedge to 0.5 m, nut white. In *Eucalyptus collina*  
woodlands of Bungle Bungle sandplains. (F&K Winnama  
Gorge.)

*Scleria rugosa* R.Br. KM 570  
Annual sedge to 0.3 m. In wet loam beside permanent  
watercourse, near Mt. John.

#### ERIOCAULACEAE

\* *Eriocaulon cinereum* R.Br. KM 564  
Rosetted herb with white flowers. In moist loamy sand in  
sandstone gullies of Bungle Bungle Plateau. (F&K Red  
Rock Creek.)

*Eriocaulon setaceum* L. KM 752  
Aquatic herb with emergent inflorescence. Only recorded  
in permanent pools at Bream Gorge.

\* *Eriocaulon* sp. B (FoK) KM 704  
Rosetted herb with white flowers. In shallow water of  
permanent pool, Winnama Gorge. Forbes and Kenneally  
collection *Eriocaulon* sp. EAC 194 refers to this species.

#### HAEMODORACEAE

*Haemodorum ensifolium* F.Muell. KM 800  
Perennial herb to 0.5 m, leathery strap-like leaves, root  
red-orange. In loamy sand beneath *Eucalyptus ptychocarpa*  
woodland at Bream Gorge.

#### LILIACEAE

*Corynotheca micrantha* (Lindley) Druce SR  
Divaricately branched herb to 0.3 m. Occasional on  
sandplains surrounding Bungle Bungle massif.

#### NAJADACEAE

\* *Najas tenuifolia* R.Br.  
Aquatic herb. (F&K Winnama Gorge.)

#### ORCHIDACEAE

\* *Cymbidium canaliculatum* R.Br. SR  
Epiphytic orchid with thick fleshy stems. Occasional on  
*Eucalyptus* spp.



## PANDANACEAE

*Pandanus aquaticus* F Muell. KM 667, 783  
Palm-like tree to 3 m., narrow wedge-shaped fruits in globular heads. On bank of permanent watercourse near Mt. John and at Wulwuldji Spring.

\* *Pandanus spiralis* R.Br. KM 781  
Palm-like tree to 10 m, with prominent leaf scars on trunk. Associated with permanent watercourses in Osmand Valley and tributaries. Includes species previously named *P. integer* (F&K Winnama Gorge.) Fruits roasted and kernels eaten (Scarlett 1985).

## PHILYDRACEAE

\* *Philydrum lanuginosum* Gaertner KM 553, 751  
Reed-like perennial herb with yellow flowers. Occasional in shallow permanent pools at Mt. John and Bream Gorge. (F&K Winnama Gorge.)

## POACEAE

*Aristida capillifolia* Henrard KM 485, 565, 769; IDC 849  
Tufted perennial grass to 0.3 m. Typically found in sandstone crevices of Bungle Bungle massif and Osmand plateau, occasional on associated sandplains.

*Aristida contorta* F.Muell. KM 448, 638  
Annual grass to 0.2 m. Occasional on dry stony hills and plains.

\* *Aristida holathera* Domin IDC 775, 862, 901  
Loosely tufted perennial grass to 0.5m. Widespread, most abundant on river levees and sand plains. Previously named *A. browniana*.

*Aristida inaequiglumis* Domin IDC 774, 816  
Loosely tufted perennial grass to 1 m. old leaves curling at base of tussock. Widespread, abundant on river levees and sandplains.

*Aristida hygrometrica* R.Br. IDC 772, 815  
Loosely tufted perennial to 0.5 m. Widespread.

\* *Arundinella nepalensis* Trin. KM 557, 568  
Robust perennial to 1.5 m. In sand beside watercourses.

*Astrebla squarrosa* C.Hubb. KM 876  
Dense leafy perennial grass to 1.5 m. Locally dominant on cracking clay soils near Kitty's Knob.

*Bothriochloa bladhii* (Retz.) S.T.Blake IDC 952  
Densely tufted perennial grass to 1 m. In sandy ephemeral watercourse, Osmand Creek.

*Bothriochloa ewartiana* (Domin) C.Hubb. KM 879; IDC 765

Perennial grass to 1 m, foliage bluish. On breakaway at Red Rock Creek and near Kitty's Knob.

*Brachiaria holosericea* (R.Br.) Hughes IDC 821  
Slender hairy annual to 0.3 m. In sandy soil beside ephemeral watercourse, Bull Creek.

\* *Brachiaria piligera* (F.Muell. ex Benth.) Hughes (F&K Piccaninny Gorge.)

*Brachiaria pubigera* (Roemer & Schultes) S.T.Blake IDC 777

Annual grass to 0.3 m. On sand levees beneath *Lysiphyllum cunninghamii* woodland, Osmand Creek.

*Brachyachne convergens* (F.Muell) Stapf KM 575; IDC 761

Annual grass to 0.2 m. On alluvial flats and ephemeral watercourses.

# *Cenchrus biflorus* Roxb. IDC 937

Annual grass. On levee beneath *Lysiphyllum cunninghamii* woodland, Osmand Creek.

\*# *Cenchrus ciliaris* L. KM 809

Perennial grass to 0.3 m. Colonizer of scalds associated with major river systems.

# *Cenchrus echinatus* SR

Annual grass to 0.3 m, spikelets very prickly. Colonizer of scalds associated with major river systems.

# *Cenchrus setigerus* Vahl KM 877

Perennial grass forming dense clumps. In heavy soils with *Eucalyptus pruinosa* woodland near Kitty's Knob.

# *Chloris inflata* Link KM 579

In sandy soil beside stagnant pools, Blue Holes. Previously named *C. barbata*.

*Chloris pectinata* Benth. KM 914

Annual grass to 0.3 m. In sandy loam of drainage line through low rocky hills at Goosehole breakaway.

+ *Chloris scariosa* (F.Muell.) Lazarides D0015471

Ord River Station. Probably occurs within the Park in the Ord River Valley.

*Chrysopogon fallax* S.T.Blake IDC 766

Robust tussock-forming perennial grass to 1.3 m, with fibrous, silky butt. Widespread, typically on floodplains, levees, and alluvial slopes.

*Chrysopogon pallidus* (R.Br.) Trin. ex Steudel KM 580, 586; IDC 825

Robust tussock-forming perennial grass to 1 m, with fibrous, silky butt. Widespread.

\* *Cymbopogon bombycinus* (R.Br.) Domin KM 419

Tufted perennial grass to 1 m, crushed leaves with strong citrus scent. Widespread.

\* *Cymbopogon procerus* (R.Br.) Domin

Perennial grass to 1.5 m, crushed leaves with citrus scent. Widespread, typically on rocky substrates.

*Dactyloctenium radulans* (R.Br.) Beauv. IDC 951

Prostrate annual grass to 0.2 m. In sandy riverbeds of major watercourses.

*Dichanthium fecundum* S.T.Blake KM 556; IDC 950

Tufted, leafy perennial to 1 m. In sandy drainage lines and watercourses.

\* *Digitaria bicornis* (Lam.) Roemer & Schultes IDC 852

Annual grass to 0.3 m. Widespread on river levees and alluvial flats.

*Digitaria brownii* (Roemer & Schultes) Hughes IDC 818

Annual grass. In sandy loam beside ephemeral watercourse, Bull Creek.

*Digitaria papposa* (R.Br.) Beauv. IDC 926

Annual grass, mature spikelets woolly. On sandy bank of ephemeral watercourse, Bull Creek.

*Dimeria ornithopoda* Trin. KM 503

Slender annual grass to 0.3 m. In damp organic loam beside permanent watercourse near Mt. John.

\* *Echinochloa colona* (L.)

Prostrate annual grass to 0.3 m. On creek banks and levees.

\* *Echinochloa* sp.

(F&K Piccaninny Gorge.)

*Ectrosia agrostoides* Benth. KM 561

In damp loamy sand of sandstone gully on Bungle Bungle Plateau.

*Ectrosia leporina* R.Br. KM 590

Slender perennial grass to 0.2 m. On sandy bank of ephemeral watercourse, Piccaninny Gorge.

\* *Ectrosia scabrida* C.E.Hubb.

(F&K Piccaninny Gorge.)

\* *Elytrophorus spicatus* (Willd.) A.Camus KM 563; IDC 857

Slender annual grass to 0.2 m, spikelets crowded in globular clusters. In damp sands beside ephemeral pools.

*Enneapogon pallidus* (R.Br.) Beauv. IDC 946

Perennial grass to 0.4 m. On levee beneath *Lysiphyllum* woodland, Osmand Creek.

*Enneapogon polyphyllus* (Domin.) N.Burb. IDC 767

Annual grass to 0.4 m, leaves covered with soft hairs. On levee beside Red Rock Creek.

*Enneapogon purpurascens* (R.Br.) Beauv. KM 587; IDC 768, 841, 935

Annual grass to 0.3 m, inflorescence compact, purplish. Widespread on alluvial flats and river levees.

*Enteropogon ramosus* B.Simon KM 878

In heavy soils with *Eucalyptus pruinosa* low woodland, Kitty's Knob.

\* *Eragrostis cumingii* Steudel KM 573, 581, 584, 585; IDC 851, 927

Slender annual grass to 0.3 m. On sandy banks of ephemeral watercourses.

*Eragrostis desertorum* Domin KM 569

Tufted perennial grass to 0.3 m. On sandy soils near breakaways fringing the Ord Valley.

*Eragrostis eriopoda* Benth. IDC 809

Perennial grass to 0.6 m, pubescent at base. On sandplains surrounding Bungle Bungle massif.

\* *Eragrostis japonica* (Thunb.) Trin.

Tufted purplish annual to 0.2 m. (F&K ephemeral creeks.)

\* *Eragrostis speciosa* (Roemer & Schultes) Steudel KM 583; IDC 824, 854

Slender perennial grass to 0.5 m. On sandy banks of ephemeral watercourses.

\* *Eragrostis tenellula* (Kunth) Steudel KM 567, 577, 582, 588; IDC 853

Perennial grass to 0.6 m. In sandy ephemeral watercourses.

\* *Eragrostis* sp. nov.

(F&K Bungle Bungle gorge.)

\* *Eriachne ciliata* R.Br. KM 558

Delicate annual grass to 0.3 m. Widespread, typically on rocky or skeletal soils.

- Eriachne festucacea* F.Muell. KM 502  
Robust tufted perennial grass to 1 m. On sandy banks of watercourses.
- Eriachne mucronata* R.Br. KM 822; IDC 850  
Dense compact perennial grass forming pendulous clumps in crevices of Bungle Bungle massif.
- \* *Eriachne obtusa* R.Br. IDC 770, 812  
Perennial grass to 0.4 m. Widespread.
- \* *Eriachne* sp. nov. aff. *tenuiculmis* W.Hartley (F&K Bungle Bungle gorge.)
- \* *Eulalia aurea* (Bory) Kunth IDC 942, 943  
Dense perennial grass to 1.5 m. Occasional dominant on creek banks and levees. Previously named *E.fulva*.
- Germania truncatiglumis* (F.Muell. ex Benth.) Chaianan KM 566, 873  
In moist soils beside permanent watercourses in the Osmand Valley.
- \* *Heteropogon contortus* (L.) P.Beauv. ex Roemer & Schultes SR  
Tufted perennial with reddish leaves and tangled seeds. Widespread in river valleys and on plains.
- + *Iseilema macratherum* Domin A0010763  
Ord River Station. Probably occurs in Park on plains of Ord River valley.
- \* *Iseilema* sp. affin. *macratherum* Domin  
Tufted reddish annual. (F&K Winnama Gorge.)
- Iseilema vaginiflorum* Domin IDC 760  
Tufted annual grass to 0.3 m. On sandy bank of Bull Creek.
- Micraira* sp. KM 932  
'Resurrection' grass to 4 cm., leaves in whorls. On Bungle Bungle Plateau.
- \* *Mnesithea rottboellioides* (R.Br.) Koning & Sosef SR  
Erect glabrous grass to 1.5 m. On banks of watercourses, Osmand Valley. Previously named *Coelorhachis rottboellioides*.
- \* *Ophiuros exaltatus* (L.) Kuntze  
Cane-like perennial to 2 m. (F&K sheltered creek banks and low-lying plains.)
- \* *Panicum decompositum* R.Br.  
Tufted annual to 0.3 m. (F&K Winnama Gorge.)
- \* *Panicum mindanaense* Merr.  
(F&K Piccaninny gorge.)
- Panicum trachyrhachis* Benth. KM 576  
In moist sand beside stagnant pools, Blue Holes.
- Paraneurachne muelleri* (Hack.) S.T.Blake KM 589  
On rocky breakaway north of Goosehole Yard, *Eucalyptus brevifolia* low open woodland.
- \* *Paspalidium clementii* (Domin) C.E.Hubb.  
Low, almost cushion-forming annual. (F&K Winnama Gorge.)
- \* *Paspalidium rarum* (R.Br.) Hughes  
(F&K Piccaninny Gorge.)
- \* *Perotis rara* R.Br. IDC 822  
Slender annual grass to 0.3 m. Widespread on sandy soils.
- \* *Phragmites karka* (Retz.) Trin. ex Steudel SR  
Robust perennial grass to 2 m, leaves broad, inflorescence plume-like. On sandy bank of permanent pool, Blue Holes; and in *Colocasia esculenta* swamp at Wulwuldji Spring. Stems used to make 'bamboo' spears (Scarlett 1985).
- \* *Plectrachne bynoei* C.E.Hubb.  
Hummock grass. (F&K scree and boulder slopes of Bungle Bungle massif.)
- \* *Plectrachne pungens* (R.Br.) C.E.Hubb. KM 637, 773; IDC 779  
Hummock grass to 1 m, with feathery inflorescence. Widespread.
- \* *Plectrachne* sp.  
(F&K Piccaninny Gorge.)
- Plectrachne* sp. nov. KM 479, 644, 758, 821; IDC 934, 833  
Hummock grass to 0.3 m, in crevices of sandstone cliffs on Bungle Bungle massif and Osmand Plateau.
- \* *Schizachyrium fragile* (R.Br.) A.Camus IDC 800  
Slender reddish annual grass to 0.4 m. In sandy soils of drainage lines and ephemeral watercourses.
- \* *Schizachyrium pseudeulalia* (Hosowaka) S.T.Blake  
(F&K Piccaninny Gorge.)
- \* *Sehima nervosum* (Rottler.) Stapf, IDC 771  
Tufted perennial grass to 1 m. On rocky breakaway beside Red Rock Creek. (F&K Winnama Gorge.)
- Setaria apiculata* (Scribner & Merrill) Schumann IDC 828  
Tufted annual grass to 0.3 m, inflorescence with stiff bristles. Occasional in sandy soils.

*Setaria dielsii* R.Herm. KM 875  
Slender weak-stemmed decumbent annual grass. On levee of Ord River beneath *Eucalyptus microtheca* forest.

*Sorghum laxiflorum* Bailey KM 578  
In sandy soil beside stagnant pool, Blue Holes.

*Sorghum stipoides* (Ewart & J.W. White) C. Gardner & C. Hubb. IDC 762  
Annual grass to 1.5 m. Osmand Valley.

*Sporobolus australasicus* Domin KM 414  
Small annual grass to 0.2 m, leaves broad, spikelets minute. Widespread, common on degraded plains of Ord River valley, and occasional in bare ground between hummock grasses.

\* *Themeda triandra* Forsskal SR  
Tufted, leafy perennial grass to 0.6 m. Rare on river levees. Previously named *T. australis*.

*Triodia intermedia* Cheel KM 642  
Hummock grass forming small clumps, spikelets winged. Dominant on rocky hillsides with *Eucalyptus brevifolia*.

*Triodia inutilis* N.Burb. KM 442, 640; IDC 830, 836, 837  
Hummock grass. Occasional on sandstone breakaways and Bungle Bungle Plateau.

\* *Triodia microstachya* R.Br. KM 457, 641, 874  
Viscid hummock grass, spikelets maroon. Abundant in sandstone gorges of Bungle Bungle massif and Osmand Plateau; occasional in drainage lines throughout Park.

\* *Triodia procera* R.Br. IDC 778  
Resinous hummock grass. Occasional in *Plectrachne pungens* hummock grasslands on sandplains and sandstone slopes. Leaves used for steaming treatment of colds and as fish poison. Resin used as adhesive (Scarlett 1985).

*Triodia pungens* R.Br. KM 915  
Hummock grass forming loose clumps, resinous. Dominant on rocky hills with low open woodlands of *Eucalyptus brevifolia* and *E. opaca*.

*Triodia spicata* N.Burb. IDC 786  
Non-resinous hummock grass with sessile spikelets. Dominant on Bungle Bungle Plateau and surrounding sandplains.

*Triodia stenostachya* Domin KM 909  
Hummock grass. On sandstone platform beside permanent watercourse, near Mt. John.

*Triodia wiseana* C. Gardner KM 643  
Glaucous hummock grass. Dominant on limestone ridge in south of Conservation Reserve (Site 6).

\* *Tripogon loliiformis* (F.Muell.) C.E.Hubb.  
Annual grass to 0.2 m. Common on sandy soils between hummock grass clumps on Bungle Bungle Plateau and surrounding sandplains.

\* *Whiteochloa capillipes* (Benth.) Lazarides (F&K Piccaninny Gorge.)

\* *Whiteochloa cymbiformis* (Hughes) B.K.Simon IDC 813  
Tall annual grass to 1.5 m. Occasional on sandplains surrounding Bungle Bungle massif.

*Xerochloa laniflora* Benth. KM 916  
Annual grass to 0.3 m, large spikelets. In moist sand beside stagnant pools, Blue Holes.

\* *Yakirra australiensis* (Domin) Lazarides & R.Webster IDC 797  
Annual grass to 0.2 m. On sandplains surrounding Bungle Bungle massif.

*Yakirra majuscula* (F.Muell. ex Benth.) Lazarides & R. Webster IDC 799  
Annual grass. On sandplain at Bull Creek.

\* *Yakirra muelleri* (Hughes) Lazarides & R.Webster (F&K Piccaninny Gorge.)

#### PONTEDERIACEAE

\* *Monochoria cyanea* (F.Muell.) F.Muell. KM 870  
Annual aquatic herb, long-petioled leaves, flowers blue. On edge of drying pool, Cathedral Gorge.

#### TACCACEAE

\* *Tacca leontopetaloides* (L.) Kuntze SR  
Stemless herb to 1 m, annual growth from perennial underground tuber. Rare in sandstone gorges of Bungle Bungle massif.

#### DICOTYLEDONAE

##### ACANTHACEAE

\* *Dicliptera armata* F.Muell. KM 444, 880  
Herb to 0.4 m, stems with prominent spiny involucre bracts. Occasional in sheltered gorges of Bungle Bungle massif and sandstone breakaways. Previously named *D. glabra*. (F&K Winnama Gorge.)

\* *Hypoestes floribunda* R.Br. SR  
Erect herb to 0.5 m, flowers pink, fruits papery. On sand bank in Bream Gorge; on rocky hillside at Winnama Gorge.

\* *Nelsonia campestris* R.Br. KM 430; IDC 843  
Trailing woolly herb, flowers white. In sandy soils beside  
epemeral and permanent watercourses.

*Rostellularia adscendens* (R.Br.) R.M.Barker KM 919  
Erect pubescent herb to 0.2 m. On limestone outcrop at  
Site 6.

#### AIZOACEAE

\* *Trianthema pilosa* F.Muell. IDC 807  
Prostrate herb, dense woolly inflorescences, flowers white.  
Common in drainage lines on sandplains and in seasonally  
wet areas.

*Trianthema triquetra* Willd. KM 889  
Prostrate herb. On light clay soil in *Eucalyptus pruinosa*  
low open woodland, Blue Holes.

#### AMARANTHACEAE

*Achyranthes aspera* L. IDC 773  
Annual herb to 0.6 m, flowers green, fruit pungent.  
Occasional on degraded river levees and flats.

\* *Aerva javanica* (Burm.f.) Juss. ex Schultes KM 418  
Shrub to 1 m, leaves glaucous, flowers cream, woolly.  
Common on degraded plains along Ord River. Deliberately  
introduced for Ord River Regeneration program.

*Alternanthera angustifolia* R.Br. KM 402, 887  
Prostrate annual herb. In sandy soils of river levees and  
major watercourses.

\* *Alternanthera denticulata* R.Br.  
Shrub to 0.3 m. (F&K rocky outcrops.)

*Alternanthera nodiflora* R.Br. KM 886  
Prostrate annual herb, flowers in dense clusters encircling  
stem. Occasional in heavier soils on Ord River plains.

\* *Amaranthus ? cuspidifolia* Domin  
(F&K Piccaninny Gorge.)

*Amaranthus interruptus* R.Br. IDC 933  
Prostrate annual herb. On river levee with *Lysiphyllum*  
woodland, Osmand Creek.

*Amaranthus pallidiflorus* F.Muell. KM 397, 888; IDC  
875, 922  
Erect or decumbent annual herb, bracts membranous. On  
river levees and in sandy soils on rocky hillsides.

*Gomphrena brachystylis* F.Muell. KM 885  
Open annual herb to 0.3 m, woolly. In sandy soils on  
sandstone hillsides.

\* *Gomphrena canescens* R.Br. KM 446  
Open annual herb to 0.3 m, flowers pink. In sandy soils on  
sandstone hillsides.

*Gomphrena cunninghamii* (Moq.) Druce KM 404  
Erect annual herb, stems reddish, flowers fading to white.  
On stream levee with *Lysiphyllum* woodland.

\* *Ptilotus capitatus* (F.Muell.) C.Gardner KM 890  
Erect perennial herb to 0.6 m, stems reddish, tepals straw-  
coloured. Occasional on rocky hillsides.

\* *Ptilotus corymbosus* R.Br.  
Erect herb, flowers white and purple. (F&K stream levee.)

*Ptilotus exaltatus* Nees KM 434; IDC 915  
Erect subshrub to 0.8 m, flowers purple. Occasional on  
plains.

*Ptilotus fusiformis* (R.Br.) Poirer KM 778; IDC 819  
Open erect herb to 0.5 m, flowers green. In drainage lines  
on sandplains and rocky slopes.

*Ptilotus polystachyus* (Gaudich.) F.Muell. KM 429  
Erect herb to 0.6 m, flowers cream. In sandy soil at base  
of Goosehole breakaway.

*Ptilotus schwartzii* F.Muell. ex Tate KM 441  
Open erect herb, flowers white and pink. In sandy loam  
with *Eucalyptus brevifolia* low open woodland, Goosehole  
breakaway.

*Ptilotus spicatus* F.Muell. ex Benth. KM 410, 496  
Annual herb to 0.3 m, stems reddish, flowers white and  
purple. In sandy loams on flats and lower slopes.

#### ANACARDIACEAE

\* *Buchanania obovata* Engl. KM 764  
Small tree to 6 m; rough, grey bark; edible green plum-like  
fruits. On river levees and flats.

#### APIACEAE

*Platysace* sp. KM 860  
Slender tree 3 m tall with broadly dividing branches. On  
sandy bank beside permanent watercourse in Bream Gorge.

#### APOCYNACEAE

\* *Alstonia actinophylla* (Cunn.) K.Schumann KM 670  
Tree to 8 m; bark grey, deeply fissured; leaves in whorls;  
copious white sap. On scree and boulder slopes of Bungle  
Bungle massif.

*Alstonia spectabilis* R.Br. KM 913  
Scrambling shrub 2 m tall. In loamy sand beside permanent watercourse, Osmand Creek.

\* *Carissa lanceolata* R.Br. SR  
Dense rounded shrub to 2 m, spinose, milky latex in stems. On levees and plains. Fruit eaten raw (Scarlett 1985).

#### ASCLEPIADACEAE

\*#*Calotropis procera* (Aiton) W.T.Aiton KM 854  
Shrub or small tree to 4 m; bark pale; large, rounded leaves; flowers white and purple; copious white sap. On degraded plains and levees of major river systems, forming dense thickets at Kitty's Knob.

\* *Cynanchum pedunculatum* R.Br. KM 784  
Climber with copious white sap and cream flowers. In sandstone gorges of Osmand Valley.

+ *Cynanchum puberulum* F.Muell. ex Benth. A0060867  
Ord River Station. Probably occurs in Park on plains of Ord River valley.

*Gymnema geminatum* R.Br. KM 824  
Shrub with arching branches, flower yellow. On sand bank in sheltered gorges of Bungle Bungle massif and Osmand Plateau.

*Gymnema stenophyllum* A. Gray SR  
In sandy soil below sandstone ridge, Goosehole breakaway.

\* *Marsdenia cinerascens* R.Br. SR  
Twinner, flowers pink. On sand bank beside permanent watercourse, Bream Gorge. (F&K Piccaninny Gorge.)

\* *Marsdenia velutina* R.Br. KM 730  
Climber with velutinous leaves. On rocky hillside of Winnama Gorge. (F&K gorge of Bungle Bungle massif.)

\* *Sarcostemma australe* R.Br. SR  
Leafless succulent climber forming clumps; stems contain copious milky sap; flowers cream. Rare on rocky slopes of Bungle Bungle massif and limestone outcrops.

\* *Tylophora flexuosa* R.Br. KM 761, 845  
Climber. On sand banks of gorges in Bungle Bungle massif and Osmand Plateau. Recorded by Forbes and Kenneally as *Tylophora* sp.

#### ASTERACEAE

# *Acanthospermum hispidum* DC. KM 629  
In loamy sand of ephemeral watercourse, Osmand Creek.

*Bidens ? bipinnata* L. IDC 936  
Annual herb, fruits with two rigid barbed awns. In loamy sand of ephemeral watercourse, Osmand Creek.

*Blumea diffusa* R.Br. ex Benth.  
Identified after publication of Forbes and Kenneally (1986).

\* *Blumea pungens* W.Fitzg. KM 696  
Viscid shrub to 1.5 m, inflorescence yellow. On sandstone wall beside spring, Osmand Plateau. (F&K gorge of Bungle Bungle massif.)

+ *Blumea saxatilis* Zoll. & Moritz D0032199  
Piccaninny Gorge.

\* *Blumea* sp. nov.  
Sticky, aromatic herb. (F&K Winnama Gorge.)

\* *Chrysogonum trichodesmoides* (F.Muell.) F.Muell.  
Erect herb. (F&K limestone ridge.)

\* *Epaltes australis* Less. KM 912  
Erect herb. Submerged in permanent waterhole on Bungle Bungle massif. Recorded by Forbes and Kenneally as *Centipeda* sp. (F&K Piccaninny Gorge.)

*Erigeron ambiguus* F.Muell. KM 463  
Erect herb to 0.2 m, inflorescence mauve. On sand bank of ephemeral watercourse on Bungle Bungle Plateau. Forbes and Kenneally collection *Asteraceae* sp. SJF 2634 refers to this species.

*Pterocaulon globuliflorus* W.Fitzg. KM 484; IDC 874  
Erect, pubescent herb, aromatic, flowerheads white and mauve. In sand at base of sandstone cliff on Bungle Bungle Plateau and surrounding sandplains.

\* *Pterocaulon niveum* Cabrera KM 600  
Erect herb, dense white tomentome, flowerheads purple. On top of Mt. John. (F&K Bungle Bungle massif.)

\* *Pterocaulon serrulatum* (Montr.) Guill. KM 844; IDC 840  
Erect herb, flowerheads white. On rocky slopes.

\* *Pterocaulon sphacelatum* (Labill.) F.Muell. KM 405, 413, 422, 795  
Aromatic, erect, bushy herb to 0.7 m; flowerheads purple fading to white. On river levees and broad plains.

\* *Pterocaulon verbascifolium* F.Muell.  
Shrub to 1 m. (F&K on levees and terraces.)

+ *Streptoglossa bubakii* (Domin) Dunlop D0001007  
Ord River Station. Possibly occurs in Park on plains of Ord River valley.

*Streptoglossa decurrens* (DC.) Dunlop KM 596  
Strongly aromatic herb; leaves cauline. On sandstone slope, Goosehole breakaway.

*Streptoglossa odora* (F.Muell.) Dunlop KM 606  
Strongly aromatic herb, inflorescence mauve. On clay soils with *Eucalyptus pruinosa* low open woodland, Ord River plains.

\* *Vernonia cinerea* Less. KM 716  
Erect herb, leaves pale green, inflorescence white. In boulders beside permanent watercourse, Winnama Gorge. (F&K Wulwuldji.)

\* *Wedelia verbesinoides* F.Muell. ex Benth.  
Aromatic semi-shrub. (F&K limestone outcrop.) Tea made from leaves used medicinally (Scarlett 1985).

#### BIGNONIACEAE

\* *Dolichandrone heterophylla* (R.Br.) F.Muell. IDC 902  
Shrub or tree to 4 m, leaves crowded on branchlets. Occasional on plains and breakaways in Ord River valley. (F&K sandplains surrounding Bungle Bungle massif.) Infusion of bark and leaves used for washing sores (Scarlett 1985).

\* *Pandorea* aff. *doratoxylon* (J.Black) J.Black KM 461  
Pendulous shrub with long flexible branches; flowers cream with purple markings in throat. On precipitous walls and chasm floors of Bungle Bungle massif.

#### BIXACEAE

\* *Cochlospermum fraseri* Planchon KM 674  
Small tree to 3 m, deciduous, flowers yellow, oblong fruit splitting to reveal seeds embedded in white fibres. Common on rocky hillsides. Roots eaten after cooking in ashes. Frayed sticks used to extract bush honey (Scarlett 1985).

#### BOMBACACEAE

*Adansonia gregorii* F.Muell. SR  
Bottle-shaped tree to 15m; smooth, grey bark; furry gourd-like fruit. Occurs uncommonly on river levees and lower slopes of major river systems. Fruits eaten (Scarlett 1985).

#### BORAGINACEAE

*Ehretia saligna* R.Br. KM 867  
Small tree to 4 m, leaves pendulous. Occasional on river levees and limestone outcrops.

\* *Heliotropium diversifolium* F.Muell. ex Benth.  
Rigid shrub to 0.3 m. (F&K Winnama Gorge.)

*Heliotropium epacrideum* F.Muell. ex Benth. KM 594  
Open shrub to 1 m, leaves at ends of branchlets, flowers white. Only recorded from *Eucalyptus cliftoniana* open woodland on dissected sandstone slope, near Mt. John.

\* *Heliotropium* sp.  
Subshrub, flowers cream. (F&K Piccaninny Gorge.)

\* *Heliotropium* sp.  
Subshrub, flowers white. (F&K Piccaninny Gorge.)

*Heliotropium* sp. KM 417, 627  
Dense low shrub to 0.3 m, flowers white. On degraded plains at Goosehole Yard and Blue Holes.

*Heliotropium* sp. KM 595, 780, 828, 831  
Open shrub to 1 m, bark pale brown, flowers white. In gorges of Bungle Bungle massif and on surrounding sandplains.

\* *Trichodesma zeylanicum* (Burm.f.) R.Br. KM 408, 423  
Perennial herb to 2 m; stems and leaves grey, with bristly hairs; flowers blue. On river levees, plains and lower slopes.

*Trichodesma* sp. A (FoCA) KM 805  
Perennial herb to 0.8 m, flowers white. In hummock grassland at Kitty's Knob.

#### BYBLIDACEAE

\* *Byblis liniflora* Salisb. KM 462  
Insectivorous annual herb, leaves glandular, flowers mauve. On sandy banks of ephemeral watercourses associated with Bungle Bungle massif.

#### CAESALPINIACEAE

*Cassia notabilis* F.Muell. KM 868  
Spreading, flat-topped shrub to 2m; fruit shiny brown with raised darker ridges. On river levees and plains.

\* *Cassia venusta* F.Muell. KM 684  
Softly hairy shrub to 1.5 m, flowers yellow. Widespread, on sand plains, river levees and rocky slopes.

\* *Lysiphyllum cunninghamii* (Benth.) de Wit KM 797  
Tree to 6 m; dark grey, fissured bark; greyish, butterfly-like leaves; flowers red. Dominant on river levees and lowland plains. Ashes used in preparation of yams (Scarlett 1985).

\* *Parkinsonia aculeata* L. KM 801  
Spreading tree to 6 m; bark green; leaves long, narrow with minute leaflets on both edges; flowers yellow. Occasional on river levee of Osmand Creek, dominant on banks of Ord River at Kitty's Knob.

\* *Petalostylis cassioides* (F.Muell.) D.E.Symon KM 477, 755  
Open shrub to 3 m; bark smooth, orange; flowers yellow. In drainage lines on Bungle Bungle Plateau, and gorges of Osmand Plateau.

*Senna artemisioides* (F.Muell.) Randell SR  
Shrub to 1.5 m, leaves blue-green, flowers yellow. On limestone ridges and sandstone breakaways. Previously named *Cassia oligophylla*.

*Senna cladophylla* (W.Fitzg.) Randell KM 632, 750  
Shrub to 0.8 m, flowers yellow. In sandy soils of gorges and lower slopes, Osmand Plateau and Osmand Range. Previously named *Cassia cladophylla*.

*Senna costata* (Bailey & C.White) Randell KM 432  
Shrub to 2 m; fruit curved, yellow when mature; seeds glossy black. In sandy soil below Goosehole breakaway. Previously named *Cassia costata*.

+ *Senna occidentalis* (L.) Link D0013207  
Ord River Station. Possibly occurs in Park on black soil plains of Ord River valley.

*Senna oligoclada* (F. Muell.) Randell KM 918; IDC 802  
Open shrub to 2 m, flowers yellow. On sand plains surrounding massif and river levees of major watercourses. Previously named *Cassia oligoclada*.

*Senna planitiicola* (Domin) Randell KM 619, 630  
Shrub to 1 m, fruit cylindrical when mature. On river levees of major watercourses.

#### CAMPANULACEAE

\* *Lobelia quadrangularis* R.Br. KM 412  
Prostrate herb with blue flowers on erect stems. In damp sandy loam beneath riparian forest, Osmand Creek. Leaves dried and chewed with ashes (Scarlett 1985).

#### CAPPARACEAE

\* *Capparis lasiantha* R.Br. ex DC. KM 603, 610  
Robust climber or shrub with recurved spines. On river levees and lowland plains of major watercourses.

\* *Capparis sepiaria* L.  
Climber. (F&K RedRock Creek.) Fruits eaten raw (Scarlett 1985).

\* *Capparis umbonata* Lindley KM 863  
Small tree with drooping narrow leaves. Rare, on rocky outcrops and clay flats. Fruits eaten raw (Scarlett 1985).

\* *Cleome cleomoides* (F.Muell.) Iltis  
Shrub to 0.4 m, flowers yellow. (F&K Piccaninny Gorge.)

\* *Cleome viscosa* L. KM 608  
Sticky, aromatic, annual herb to 0.5 m; flowers yellow; fruits narrow, cylindrical. Widespread.

#### CARYOPHYLLACEAE

*Polycarpaea corymbosa* (L.) Lam.  
Identified after publication of Forbes and Kenneally (1986).

*Polycarpaea diversifolia* Domin IDC 769  
Annual herb with reddish stems and white flowers. Occasional on river levees and flats.

\* *Polycarpaea involucrata* F.Muell. KM 453; IDC 8362  
Low herb with reddish stems. On sandstone platforms associated with Bungle Bungle massif.

\* *Polycarpaea longiflora* F.Muell. IDC 866  
Annual herb, flowers pink. On sandplain surrounding Bungle Bungle massif.

\* *Polycarpaea* sp.  
Herb to 0.1 m with reddish stems. (F&K Winnama Gorge.)

#### CHENOPODIACEAE

*Dysphania plantaginella* F.Muell. KM 810  
Erect herb to 0.2 m with greenish inflorescence. In alluvial sand of Ord River at Kitty's Knob.

*Salsola kali* L. KM 416; IDC 923  
Dense rounded shrub to 1 m; stems and leaves succulent, becoming brittle and spiny with age; fruits thin and membranous. On river levees and lowland plains, common on degraded flats in Ord River valley.

#### CHRYSOBALANACEAE

*Parinari nonda* F.Muell. ex Benth. KM 861  
Tree to 6 m; bark grey, deeply fissured; branchlets pendulous; leaves much paler beneath. One tree recorded on sandplain surrounding Bungle Bungle massif.

#### COMBRETACEAE

\* *Terminalia arostata* Ewart & O.B.Davies SR  
Tree to 10 m; bark grey, deeply fissured; branches long and weeping. On lowland plains and lower slopes of Ord River valley. Kernels of fruit eaten raw and leaves used for steaming treatment of colds (Scarlett 1985).

\* *Terminalia bursarina* F.Muell. KM 428, 497  
Tree to 10 m; typically bent by floodwaters; bark brown, hard, deeply fissured; flowers cream. In rocky beds of major watercourses. Edible gum (Scarlett 1985).



\* *Terminalia canescens* (DC.) Radkl. KM 665, 683  
Small tree to 4 m; leaves silvery with silky hairs; fruit dry, pale brown. Common on rocky slopes, occasional on river levees. Edible gum (Scarlett 1985).

\* *Terminalia carpentariae* C.White KM 743  
Tree to 6 m; bark grey, flaky; flowers cream; fruit fleshy, green. On rocky hillside, Winnama Gorge.

\* *Terminalia platyphylla* F.Muell. SR  
Tree to 20 m with dark, fissured bark. Codominant in riparian forest along larger watercourses. Edible gum (Scarlett 1985).

\* *Terminalia volucris* R.Br. ex Benth. KM 719  
Tree to 6 m; deciduous; flowers cream with strong sweet smell; fruits two-winged. In coarse sand at base of rocky slope, Winnama Gorge. (F&K Osmand Valley.) Edible gum and fine wood shavings used for body decoration (Scarlett 1985).

#### CONVOLVULACEAE

\* *Bonamia linearis* (R.Br.) H.Hallier KM 634, 926; IDC 789  
Scandent perennial herb, flowers white. In *Eucalyptus collina* woodland on sandplain surrounding Bungle Bungle massif.

*Bonamia media* (R.Br.) Hallier f. KM 633  
Prostrate hairy herb. On rocky hillside at Blue Holes.

*Bonamia pannosa* (R.Br.) Hallier f. KM 620; IDC 867, 910  
Trailing, densely hairy herb; flowers blue. In sandy soils on sand plains surrounding Bungle Bungle massif and on sandstone hillsides.

*Evolvulus alsinoides* L. KM 920, 921  
Small hairy perennial herb, flowers blue. Common on rocky slopes.

*Ipomoea eriocarpa* R.Br. KM 631  
Climber. In loamy sand beside permanent watercourse, Osmand Creek.

*Ipomoea muelleri* Benth. KM 439  
Pubescent trailer with deltoid leaves. In sandy drainage line at Goosehole breakaway.

\* *Ipomoea polymorpha* Roemer & Schultes KM 927  
Decumbent herb, flowers purple. In alluvial sand, Blue Holes. (F&K Piccaninny Gorge.)

\* *Jacquemontia browniana* Ooststr. KM 647  
Erect shrub to 0.5 m. In loamy sand beside ephemeral watercourse at Site 6. (F&K Giliwal.)

*Merremia* sp. KM 922  
Robust climber in *Eucalyptus pruinosa* low woodland at Kitty's Knob.

*Merremia* sp. IDC 823  
Trailing vine, leaves green and maroon, flowers mauve. In ephemeral watercourse on *Eucalyptus collina* sandplain surrounding Bungle Bungle massif.

*Operculina aequisejala* (Domin) R.W.Johnson KM 409  
Robust annual twiner, seeds enclosed in translucent papery bladder. In loamy sand beside permanent watercourse, Osmand Creek.

\* *Operculina brownii* Ooststr.  
Trailing perennial to 2 m. (F&K basalt outcrop.)

*Polymeria ambigua* R.Br. KM 447  
Herb with trailing stems. On sandplain above Goosehole breakaway.

*Polymeria angusta* F.Muell. KM 646, 648  
Trailing pubescent herb. In loamy sand of ephemeral watercourses and lower slopes.

\* *Polymeria* sp.  
Tangled herb trailing to 0.5 m. (F&K Piccaninny Gorge.)

*Xenostegia tridentata* (L.) Austin & Staples KM 438  
Dense creeper, flowers pale yellow. In drainage line of Goosehole breakaway.

#### CUCURBITACEAE

# *Citrullus colocynthis* (L.) Schrader KM 808  
Decumbent trailing herb, flowers pale yellow, melon-like fruit green and white. In alluvial sand of Ord River at Kitty's Knob.

\* *Citrullus lanatus* (Thunb.) Matsumura & Nakai KM 628  
Decumbent annual herb, melon-like fruit green mottled white. On sand plain beside ephemeral creek, Osmand Creek. (F&K Red Rock Creek.)

*Luffa graveolens* Roxb. KM 908  
Climber with fibrous fruit. In riparian forest beside permanent watercourse, near Mt. John.

*Mukia maderaspatana* (L.) M.Roemer KM 437  
Climber; leaves triangular; fruit globular, green. In sandy soil among dissected sandstone, Goosehole breakaway.

\* *Trichosanthes cucumerina* L.  
Climber, flowers white, fruit orange. (F&K Piccaninny Gorge.)

## ELATINACEAE

\* *Bergia pedicellaris* (F.Muell.) Benth.  
Annual herb, flowers pink. (F&K in sands along ephemeral watercourse.)

*Bergia trimera* Fischer & C.Meyer KM 609  
Prostrate annual herb. In loamy sand beside permanent watercourse, Blue Holes.

## ERYTHROXYLACEAE

*Erythroxylum ellipticum* R.Br.  
Fruits eaten raw (Scarlett 1985).

## EUPHORBIACEAE

*Antidesma ghaesembilla* Gaertner  
Fruits eaten raw (Scarlett 1985).

*Breynia cernua* (Poiret) Muell. Arg. KM 671  
Small tree to 3 m; bark grey, fissured; small black fruit. On sand bank in Cathedral Gorge.

*Breynia rhynocharpa* Benth. KM 712, 859  
Multi-stemmed shrub to 3 m with arching branches; bark grey, flaky; fruit ripening dark purple. On exposed sandstone cliff at Winnama Gorge, and on sand bank beneath closed forest in Bream Gorge.

\* *Bridelia tomentosa* Blume IDC 939  
Spreading shrub to 3 m. On rocky outcrop beside Osmand Creek. (F&K gorge in Bungle Bungle massif, Winnama Gorge.)

\* *Euphorbia coghlani* Bailey KM 1008  
Sprawling subshrub with copious milky latex, flowers white. On sandplain surrounding Bungle Bungle massif and sandstone breakaways.

*Euphorbia drummondii* Bolss KM 933  
Prostrate herb with reddish stems. On disturbed eroded plan of Ord River valley.

\* *Euphorbia hirta* L. KM 599  
Prostrate herb with reddish leaves. Common on stream levees.

\* *Euphorbia* aff. *micradenia* (Boiss.) Hassall  
Semi-shrub to 0.6 m. Previously named *Chamaesyce* aff. *micradenia*. (F&K Winnama Gorge.)

*Euphorbia schultzii* Benth. KM 691, 1005; IDC 913  
Low annual herb, leaves with reddish margin. In sandy soils of lowland plains and lower slopes.

\* *Euphorbia tannensis* Sprengel KM 598  
Shrub to 1 m, leaves narrow and inconspicuous, copious milky latex in stems. On sand bank in Piccaninny Gorge.

\* *Euphorbia* aff. *tannensis* Sprengel  
Shrub to 1.5 m. (F&K Winnama Gorge.)

\* *Euphorbia wheeleri* Baillon  
Semi-shrub to 0.4 m. (F&K black-soil stream levee.)

\* *Euphorbia* sp.  
Low herb, leaves purplish and green. Previously named *Chamaesyce* sp. (F&K Osmand Range.)

\* *Flueggea virosa* (Roxb. ex Willd.) Voigt IDC 940  
Spreading shrub to 3 m. Widespread on river levees and rocky slopes. Previously named *Securinega melanthesoides*. Fruits eaten raw (Scarlett 1985).

*Leptopus decaisnei* (Benth.) H.Pojark KM 612  
Much branched shrub to 1 m. In alluvial sand of major watercourses.

\* *Mallotus nesophilus* Muell.Arg. KM 740, 782  
Small tree to 4 m; rounded hairy leaves much paler beneath; fruits round, yellow. In sandstone gorges and riparian forests of Osmand Valley and Winnama Gorge. (F&K gorges of Bungle Bungle massif.) Fruits eaten raw (Scarlett 1985).

*Petalostigma quadriloculare* F.Muell. KM 865  
Low shrub to 1 m, leaves silvery hairy beneath, segmented fruits orange. In *Eucalyptus brevifolia* open woodland on rocky slope above Winnama Gorge. Recorded by Forbes and Kenneally as *P. nummularium*.

\* *Phyllanthus ciccooides* Muell. Arg.  
Small tree to 4 m. (F&K Osmand Range.)

*Phyllanthus maderaspatensis* L. KM 934, 1007  
Erect herb to 0.3 m. In sandy soils along watercourses and on lower slopes.

*Phyllanthus simplex* Retz. KM 420, 1006  
Erect herb to 0.2 m. On limestone outcrops and drainage lines through lower slopes. First record for Western Australia.

\* *Phyllanthus virgatus* G.Forster  
Sprawling subshrub. (F&K sandplain at base of Bungle Bungle massif and Piccaninny Gorge.)

*Sebastiania chamaelea* (L.) Muell.Arg. KM 934, 935  
Spreading herb on low rocky slope at Bream Gorge.

## FABACEAE

### *Abrus precatorius* L. KM 790

Slender perennial vine; deciduous; fruit woody, enclosing bright red, black-spotted seeds. On river levee at Wulwuldji.

### *Aeschynomene indica* L. IDC 944

Erect annual herb to 1 m, fruit breaking into squarish segments. In dry claypan, Osmand Creek.

*Bossiaea bossiaeooides* (Cunn. ex Benth.) Court KM 757  
Leafless shrub with broadly winged blue-green branches, flowers yellow. In alluvial sand, Bream Gorge.

### *Cajanus crassicaulis* Maesen KM 786

Open shrub to 2 m, dense white tomentum, flowers yellow. On limestone hillsides in the Osmand Valley.

### \* *Cajanus pubescens* (Ewart & Morrison) Maesen

Open shrub to 0.7 m, flowers yellow. Previously named *Atylosia pubescens*. (F&K Osmand Valley.)

### \* *Cajanus reticulata* (Dryander) F. Muell.

Open shrub to 2 m, flowers yellow. Previously named *Atylosia reticulata*. (F&K Bungle Bungle massif surrounds and rocky slopes.)

### *Cajanus* sp. KM 645, 654, 745, 814; IDC 783

Sticky shrub to 3 m, leaves trifoliate, flowers yellow. On sandstone slopes and sandplains associated with Osmand Valley, and on sandplains surrounding Bungle Bungle massif. Dominant on sand sheet on eastern side of Bungle Bungle massif after hot burn in previous year.

### \* *Canavalia papuana* Merr. & Perry KM 732

Vigorous climber with woody twisted fruits. On sandbank at Winnama Gorge. (F&K riparian fringe of ephemeral streams.) Pods baked and eaten (Scarlett 1985).

### *Crotalaria crispata* (F. Muell.) Benth. KM 435, 636; IDC 781

Annual or short-lived perennial herb, flowers yellow, fruits inflated. On sandplain surrounding Bungle Bungle massif and at Goosehole breakaway.

### \* *Crotalaria cunninghamii* R.Br. KM 816

Open shrub to 2 m; leaves grey, felty, trifoliate; flowers green. In sandy soils along Osmand Creek and tributaries; on sandplain surrounding Bungle Bungle massif.

### *Crotalaria medicaginea* Lam. KM 607; IDC 906

Annual pubescent herb to 0.5 m; leaves trifoliate, small; flowers yellow; fruit swollen, squarish. In sandy soils beside watercourses and on rocky slopes.

### \* *Crotalaria montana* Roth

Semi-shrub to 0.5 m, flowers yellow. Previously named *Crotalaria linifolia*. (F&K Winnama Gorge.)

### \* *Crotalaria novae-hollandiae* DC. KM 399

Subshrub to 1 m, leaves unifoliate, flowers yellow. In sandy soils along Osmand Creek and tributaries.

### *Crotalaria retusa* L. KM 614; IDC 930

Subshrub to 1 m, flowers yellow, fruit inflated. In sandy soils along watercourses and drainage lines.

### \* *Crotalaria verrucosa* L. KM 841

Erect herb to 0.3 m, flowers blue. In sandy loam beside Osmand Creek.

### \* *Desmodium filiforme* Zoll. & Moritzi IDC 908

Sprawling herb to 0.5 m with articulated pods. In sandy soils beside Osmand Creek and in drainage lines on sandplain surrounding Bungle Bungle massif.

### \* *Erythrina vespertilio* Benth.

Rare tree to 6 m. (F&K Blackfellows Creek on Texas Downs Station.) Wood used to make woomeras (Scarlett 1985).

### *Glycine arenaria* Tindale KM 635; IDC 798

Perennial twining herb, leaves grey, flowers cream to green, fruits borne underground as well as above. On sandplain surrounding Bungle Bungle massif.

### *Glycine tomentella* sens. lat. Hayata KM 652, 825; IDC 842

Trailing herb with mauve flowers. On sandstone breakaways and gorges of Bungle Bungle massif.

### \* *Indigofera colutea* (Burm.f.) Merr. KM 400; IDC 792

Annual herb, flowers red, fruit viscid. In sandy soils on river levees and flats, on rocky lower slopes and on sandplain surrounding Bungle Bungle massif.

### *Indigofera hirsuta* L. KM 440; IDC 780

Annual herb to 0.5 m, leaves hairy, flowers red. On sandy bank of ephemeral watercourse at Bull Creek, and in drainage line of Goosehole breakaway.

### *Indigofera linifolia* (L.f.) Retz. KM 613; IDC 763

Annual herb with small red flowers and white globular fruit. Widespread on river levees and rocky lower slopes.

### *Indigofera linnaei* Ali KM 911

Spreading subshrub, leaflets small, flowers pink. In *Lysiphyllum* woodland beside Osmand Creek.

- \* *Indigofera monophylla* DC.  
Semi-shrub to 0.7 m. (F&K Piccaninny Gorge.)
- \* *Jacksonia odontoclada* F.Muell. ex Benth. KM 478, 826; IDC 803  
Intricately branched shrub to 2 m, leaves reduced to scales, sepals red-brown, flowers orange. On Bungle Bungle Plateau and surrounding sandplain.
- \* *Jacksonia thesioides* (Cunn.) Benth. KM 467; IDC 876  
Open shrub to 3 m, branchlets silvery pubescent, flowers yellow. In drainage lines and ephemeral watercourses on Bungle Bungle Plateau and surrounding sandplains.
- Lotus australis* Andrews KM 653  
Spreading subshrub to 1 m, flowers mauve. In coarse gravelly sand of ephemeral watercourse at Site 6.
- \* *Mirbelia viminalis* (Cunn.) C.Gardner KM 492  
Intricately branched shrub to 1.5 m, leaves spiny, flowers yellow. In *Eucalyptus cliftoniana* woodland on Bungle Bungle Plateau. (F&K Winnama Gorge.)
- \* *Nomismia rhomboidea* (F.Muell. ex Benth.) Pedley KM 738; IDC 7982  
Trailing, pubescent herb with broad trifoliate leaves and yellow flowers. On sandplains, river levees and lower slopes. Previously named *Rhynchosia rhomboidea*. Whole plant used as fish poison (Scarlett 1985).
- Paratephrosia lanata* (Benth.) Domin KM 616  
Erect open shrub with few branches to 2 m, flowers orange. On dissected sandstone hillside near Mt. John.
- \* *Plagiocarpus axillaris* Benth. KM 694  
Rounded shrub with erect branches to 1 m, stems orange with dense white hairs. On sandstone hillside at Bream Gorge. (F&K Winnama Gorge.)
- \* *Psoralea badocana* (Blanco) Blanco  
Spreading shrub to 1 m, white-grey felty leaves, flowers pale magenta. (F&K riparian forest Red Rock Creek.)
- \* *Psoralea martinii* F.Muell.  
Erect shrub to 1 m, flowers mauve. (F&K rocky scree under *Eucalyptus brevifolia*.)
- Rhynchosia minima* (L.) DC. KM 415  
Trailing herb, leaves suborbicular. On river levees and plains.
- \* *Sesbania cannabina* (Retz.) Poir. KM 427, 456, 495  
Shrub to 2 m, bark green, flowers yellow with red striations. In alluvial sand beside watercourses including on Bungle Bungle Plateau.
- \* *Sesbania formosa* (F.Muell.) N.Burb.  
Tree to 10 m; bark pale, corky; flowers large, white. In riparian forest along Osmand Creek and tributaries, and Ord River. Wood used to make woomeras (Scarlett 1985).
- + *Sesbania simpliciuscula* F.Muell. ex Benth. A0010759  
Ord River Station. Possibly occurs in Park on plains of Ord River valley.
- \* *Templetonia hookeri* (F.Muell.) Benth. KM 470, 615  
Slender shrub to 2 m with smooth orange-brown bark; leaves terete, flowers pale yellow. In sandy drainage lines of Osmand Range and Bungle Bungle Plateau.
- Tephrosia leptoclada* Benth. IDC 907  
Annual herb to 0.3 m, flowers blue. On sandplain surrounding Bungle Bungle massif and rocky hills.
- Tephrosia phaeosperma* F.Muell. ex Benth. IDC 785, 898  
Erect open shrub to 2 m; leaves silvery grey; flowers mauve. On sandy soils of drainage lines, river levees and sandstone lower slopes.
- Tephrosia purpurea* (L.) Pers. KM 930, 931  
Slender open subshrub to 0.5 m, flowers pink. On limestone outcrops and rocky lower slopes.
- \* *Tephrosia remotiflora* F.Muell. ex Benth.  
Slender, spreading subshrub with magenta-pink flowers. (F&K Wulwuldji.)
- \* *Tephrosia rosea* F.Muell. ex Benth. KM 650, 775  
Open shrub to 2 m, leaves silvery-green, flowers purple. On sandstone slopes and drainage lines.
- Tephrosia simplicifolia* F.Muell. ex Benth. IDC 805  
Erect subshrub to 0.7 m, flowers orange. On sandplains surrounding Bungle Bungle massif.
- Tephrosia supina* Domin KM 929  
Pubescent subshrub to 0.5 m. On degraded clay flat at Blue Holes and Goosehole Yard.
- \* *Tephrosia uniovulata* F.Muell.  
Shrub to 1 m, leaves ovate, velutinous, flowers pink. (F&K Piccaninny Gorge.)
- \* *Tephrosia virens* Pedley KM 651; IDC 810  
Open, slender shrub to 1.5 m; flowers orange. In sandy soils on river levees and sandstone lower slopes.
- Tephrosia* sp. KM 443  
Erect subshrub to 1 m, leaves densely hairy, flowers orange. In dissected sandstone with *Eucalyptus brevifolia* low open woodland at Goosehole breakaway.

*Tephrosia* sp. IDC 839

Erect shrub to 1 m, bark white, furrowed. On steep rocky slope with *Triodia inutulis* at Bull Creek.

\* *Vigna lanceolata* Benth.

Trailing herb with slender stems. (F&K Red Rock Creek.) Roots eaten after cooking in ashes (Scarlett 1985).

\* *Zornia nervata* Mohl. IDC 811, 909

Spreading herb with paired leaflets, flowers orange. On sandy soils surrounding Bungle Bungle massif and on river levee of Osmand Creek.

#### GOODENIACEAE

\* *Dampiera conospermoides* W.Fitzg. KM 474; IDC 847  
Open shrub to 1 m, leaves much paler beneath, flowers small, purple. On Bungle Bungle plateau and associated gorges and outliers.

\* *Goodenia heterochila* F.Muell. KM 917; IDC 912

Trailing herb to 0.2 m. On rocky lower slopes.

\* *Goodenia scaevolina* F.Muell. KM 472; IDC 920

Erect shrub to 1 m; viscid, smelly leaves and stems; flowers purple. On Bungle Bungle plateau and associated gorges and outliers.

*Goodenia* sp. KM 431; IDC 801

Erect pubescent herb to 0.1 m, flowers yellow. In loamy sand of ephemeral watercourses.

*Goodenia* sp. KM 459

Slender erect herb to 0.1 m, flowers yellow. On sandy bank of ephemeral watercourse on Bungle Bungle Plateau.

*Scaevola browniana carolin* R.Br. KM 827, 928; IDC 872

Erect shrub to 1 m, leaves pubescent, flowers blue. On sandplain surrounding Bungle Bungle massif and on sandstone slopes near Mt. John.

*Scaevola macrostachya* Benth.

Identified after publication of Forbes and Kenneally (1986).

#### HALORAGACEAE

\* *Gonocarpus leptothecus* (F.Muell.) Orchard KM 848

Subshrub to 0.5 m with stiff hairs. In alluvial sand beside permanent watercourse at Bream Gorge. (F&K Winnama Gorge, Piccaninny Gorge.)

#### HERNANDIACEAE

\* *Gyrocarpus americanus* Jacq. SR

Deciduous tree with stout golden-white trunk, broad heart-shaped leaves, fruits winged capsules. Occasional on breakaways in Ord River valley, common along Spring Creek Track. (F&K Turkey Creek, Bungle Bungle massif.) Wood used to make 'coolimans' (Scarlett 1985).

#### LAMIACEAE

\* *Coleus scutellarioides* Benth.

Herb to 0.3 m with square stem and opposite leaves, flowers mauve. (F&K Osmand Valley.)

*Epimeredi salviifolius* (R.Br.) Rothm. KM 907

Spindly open shrub to 1.5 m, flowers mauve with white spots. On limestone hillside at Wulwuldji.

#### LAURACEAE

\* *Cassytha capillaris* Meissner KM 910

Leafless parasitic climber, twining and attaching by small suckers to other plants, stems glabrous. On Bungle Bungle Plateau and surrounding sandplains, limestone outcrops and rocky hills.

\* *Cassytha filiformis* L. KM 471

Leafless parasitic climber, twining and attaching by small suckers to other plants, stems hairy. On Bungle Bungle Plateau and associated gorges, in drainage line at base of Wickham outlier at Site 6.

#### LENTIBULARIACEAE

+ *Utricularia aurea* Lour. D0019109

Ord River Station. Possibly occurs in Park.

*Utricularia caerulea* L. KM 747

Delicate erect herb to 0.1 m, flowers purple with yellow spot in throat. In moist loam beside permanent watercourse at Bream Gorge.

\* *Utricularia chrysantha* R.Br.

Herb to 5 cm. (F&K Osmand Creek.)

#### LOGANIACEAE

\* *Mitrasacme nudicaulis* Reinw. ex Blume

Herb to 0.2 m, flowers white. Recorded by Forbes and Kenneally as *M. elata*. (F&K Winnama Gorge.)

\* *Mitrasacme* sp. A (FoK)

Herb to 0.1 m. Recorded by Forbes and Kenneally as *M. pygmaea* (F&K Bungle Bungle massif.)

## LORANTHACEAE

\* *Amyema benthamii* (Blakely) Danser  
Hemi-parasite on *Lysiphyllum cunninghamii*. (F&K Turkey  
Creek above junction with Winnama Springs Creek.)

\* *Amyema bifurcatum* (Benth.) Tieghem  
Hemi-parasite on *Eucalyptus dichromophloia*. (F&K south  
of Bungle Bungle Outcamp.)

*Amyema ? sanguineum* (F.Muell.) Danser KM 817  
Hemi-parasite on *Eucalyptus brachyandra*, flowers pink.  
Cathedral Gorge.

*Amyema villiflorum* (Domin) Barlow KM 891  
Hemi-parasite on *Terminalia bursarina*. Blue Holes.

\* *Deacaisnina petiolata* (Barlow) Barlow KM 723  
Hemi-parasite on *Buchanania obovata*, leaves glaucous,  
flowers orange with green reflexed tips. Winnama Gorge.  
(F&K sandplain north of Bungle Bungle massif.)

\* *Lysiana spathulata* (Blakely) Barlow  
Hemi-parasite on *Acacia stipuligera*, flowers scarlet with  
yellow-green reflexed tips. (F&K sandplain north of Bungle  
Bungle massif, Winnama Gorge.)

\* *Lysiana subfalcata* (Hook.) Barlow KM 655, 656, 657  
Hemi-parasite on *Atalaya hemiglauca* and *Acacia* spp.,  
flowers red with yellow-green tips. Common on river  
levees and flats.

## LYTHRACEAE

*Ammannia baccifera* L. KM 902, 904  
Erect reddish herb to 0.3 m. In moist sandy loam beside  
permanent watercourse at Blue Holes and near Mt. John.

\* *Ammannia multiflora* Roxb. KM 903, IDC 864  
Erect herb to 0.3 m, leaves dilated at base, capsule  
globular. On sand bank beside permanent watercourse  
near Mt. John. (F&K Winnama Gorge, Piccaninny Gorge.)

\* *Rotala diandra* (F.Muell.) Koehne KM 483  
Erect herb to 0.1 m in moist sand beside pool on Bungle  
Bungle Plateau. (F&K Piccaninny Gorge, Red Rock Creek.)

\* *Rotala mexicana* Cham. & Schldl.  
Semi-aquatic succulent herb. (F&K Winnama Spring,  
Piccaninny Gorge.)

## MALVACEAE

*Abutilon andrewsianum* W.Fitzg. IDC 932  
Erect open shrub, heart-shaped pubescent leaves, flowers  
yellow. On creek levees.

*Abutilon leucopetalum* (F.Muell.) F.Muell. ex Benth.  
IDC 938

Erect shrub to 1 m, heart-shaped pubescent leaves, flowers  
white. On creek levees.

*Abutilon otocarpum* F.Muell. KM 906  
Low shrub to 0.4 m, orbicular velvety leaves. On creek  
levees and low rises.

\* *Gossypium australe* F.Muell. KM 660; IDC 945  
Shrub to 1.5 m, dull-green pubescent leaves, fruit with  
several hairy seeds. Widespread on sandplains, river levees  
and rocky hillsides.

*Herissantia crispa* (L.) Briz. IDC 931  
Slender herb to 0.4 m, flowers yellow, fruit inflated. On  
creek levee with *Lysiphyllum* woodland, Osmand Valley.

*Herissantia* sp. KM 662, 421  
Erect slender shrub to 0.6 m, flowers yellow. On rocky  
hills with *Eucalyptus brevifolia* low open woodland and on  
broad plains with *Calotropis procera* shrubland in Ord  
River valley.

\* *Hibiscus leptocladus* Benth. KM 690; IDC 787, 871  
Open spreading shrub to 1.5 m, flowers mauve with  
maroon blotch at base. Widespread on sandplains and  
rocky hillsides.

\* *Hibiscus meraukensis* Hochr. IDC 914  
Erect open shrub to 1 m, lower leaves palmately lobed,  
flower white with red basal spot. On river levees and in  
ephemeral watercourses through rocky hillsides and gorges.

*Hibiscus panduriformis* Burman f. KM 893  
Shrub to 1.5 m, leaves discolorous, capsule with dense  
golden hairs. On *Terminalia platyphylla* woodland on  
river levee, Osmand Creek.

*Hibiscus pentaphyllus* F.Muell. KM 905  
Subshrub to 0.5 m, leaves deeply divided. In loamy sand  
beside permanent watercourse, Osmand Creek.

\* *Hibiscus setulosus* F.Muell. KM 894  
Subshrub to 0.5 m densely covered with fine yellow  
bristles. On rocky hillside with *Eucalyptus brevifolia* low  
open woodland at Winnama Gorge, and in alluvial sand at  
Bream Gorge.

*Hibiscus* sp. KM 765  
Open shrub to 3 m, sandpaper-like leaves, flowers pink  
with maroon blotch in base. In alluvial sand at Bream  
Gorge.

\* *Hibiscus* sp. nov.  
Shrub to 1 m. (F&K Osmand Valley.)

\* *Hibiscus* sp. nov. 'Middle Springs'  
Open shrub to 2 m, flowers pink with maroon blotch at base. (F&K Winnama Gorge.)

# *Malvastrum americanum* (L.) Torrey KM 661  
Erect herb to 0.5 m in loamy sand beside permanent watercourse, Osmand Creek.

# *Sida acuta* Burman f. KM 663  
Erect herb in loamy sand of watercourse at Blue Holes.

*Sida fibulifera* Lindley KM 411, 897, 898  
Subshrub to 0.5 m, flowers yellow. On degraded plains and river levees.

\* *Sida rohlena* Domin KM 901; IDC 776  
Erect subshrub to 1 m, leaves grey-green, seeds awned. On creek banks and levees. (F&K Piccaninny Gorge.)

\* *Sida* ? *spinosa* L.  
(F&K Piccaninny Gorge.)

*Sida* sp. 'virgata' Hook. (FoCA) KM 445, 659, 895, 896, 899, 900; IDC 859  
Spindly open shrub to 2 m with rusty stellate hairs, flowers yellow. In sandy soils beside ephemeral watercourses and on dissected sandstone hillsides.

*Sida* sp. nov. KM 819; IDC 903  
Open shrub to 1 m, leaves broad, flowers yellow. On sand bank at Cathedral Gorge, and in alluvial sand of ephemeral watercourse at Bull Creek.

#### MELASTOMATACEAE

*Melastoma polyanthum* Blume KM 705  
Shrub to 2.5 m, leaves with 3-5 prominent veins, large showy mauve flowers. On banks of permanent watercourses beneath closed forest at Winnama Gorge, Bream Gorge and near Mt. John.

#### MELIACEAE

\* *Melia azedarach* L. KM 673, 744  
Tree to 4 m, leaves crowded at ends of branches, flowers white and mauve. In rocky gullies at Winnama Gorge and Site 6. (F&K Djimbitjba.)

\* *Owenia vernicosa* F.Muell. KM 664  
Tree to 6 m, pinnate leaves crowded at ends of branches, pendulous clusters of reddish fruits. On dissected sandstone hillside near Mt. John and on rocky hillside at Winnama Gorge.

#### MENISPERMACEAE

\* *Stephania japonica* (Thunb.) Miers KM 672, 760  
Climber with round leaves, flowers small and cream. In sandy gorges of Bungle Bungle massif.

\* *Tinospora smilacina* Benth. KM 770; IDC 846  
Vigorous climber, flowers green, fruit orange. Widespread.

#### MENYANTHACEAE

\* *Nymphoides indica* (L.) Kuntze  
Aquatic herb with floating leaves. (F&K Red Rock Creek.)

#### MIMOSACEAE

\* *Acacia acradenia* F.Muell. KM 426, 763; IDC 806  
Shrub to 3 m; bark smooth, grey; phyllodes thick; flowers in spike. Widespread. Edible gum (Scarlett 1985).

*Acacia ampliceps* Maslin KM 525  
Small tree to 4 m, dense crown, flowers globular and pale yellow. On bank of rocky ephemeral creek at Site 6.

\* *Acacia coriacea* DC.  
Low tree with hard black bark. (F&K Red Rock Creek.)  
Wood used to make boomerangs, axe handles and fighting sticks (Scarlett 1985).

\* *Acacia cowleana* Tate  
Shrub to 1 m. (F&K stony slope.)

\* *Acacia dunnii* (Maiden) Turrill  
Glaucous shrub to 4 m. (F&K Winnama Gorge.)

\* *Acacia eriopoda* Maiden & Blakely KM 699  
Shrub or tree to 5 m; bark grey, stringy; phyllodes linear. Dominant in sandy drainage lines associated with Bungle Bungle massif and occasional on banks of major watercourses.

\* *Acacia farnesiana* (L.) Willd. KM 425, 500  
Spreading spiny shrub to 3 m, bark smooth with prominent lenticels, flowers globular and golden. Forming thickets on river levees and flats of major watercourses. Wood used to make boomerangs and fighting sticks (Scarlett 1985).

\* *Acacia gonocarpa* F.Muell. KM 476, 527, 700, 774  
Rounded shrub to 3 m; bark grey, smooth; flower spikes yellow; woody fruits prominently ridged. In sandy loams with *Eucalyptus collina* and *E. cliftoniana* woodlands on Bungle Bungle Plateau and surrounding sandplains; and on dissected sandstone hillside near Mt. John.

\* *Acacia hemignosta* F.Muell. SR

Tree to 5 m with pendulous branchlets, bark rough and flaky, leaves bluish-green. On river levees and low rocky slopes.

*Acacia hemsleyi* Maiden IDC 949

Shrub to small tree to 4 m, bark rough and grey, cylindrical yellow flowers. On river levee of Osmand Creek.

*Acacia* aff. *hippuroides* Heward ex Benth. KM 475; IDC 924

Slender shrub to 1.5 m; smooth grey bark; flowers large, golden; young fruit viscid. Rare on Bungle Bungle massif and associated outliers.

\* *Acacia holosericea* Cunn. ex Don KM 401, 524, 804

Small tree or shrub to 4 m, grey smooth bark, large silvery-grey phyllodes, fruit in ball-like clusters. Widespread on river levees, plains and drainage lines through low hills. Green fruits used as fish poison (Scarlett 1985).

\* *Acacia laccata* Pedley

Shrub to 2 m. (F&K Bungle Bungle Plateau.)

\* *Acacia* ? *leptophleba* F.Muell.

Shrub to 2 m. (F&K Winnama Gorge.)

\* *Acacia lycopodiifolia* Cunn. ex Hook. KM 452, 517, 520, 523, 526, 529, 793

Low spreading shrub to 1 m; narrow leaves arranged in whorls; flowers globular, yellow; fruit viscid. Common on rocky hillsides.

\* *Acacia lysiphloia* F.Muell. KM 433

Rounded shrub to 3 m with 'Minnie-Ritchie' bark, flowers yellow, fruits viscid. On sandplains surrounding Bungle Bungle massif.

\* *Acacia monticola* J.Black KM 762

Small tree to 4 m with reddish 'Minnie Ritchie' bark, flowers yellow, fruits brown and viscid. In drainage lines on Bungle Bungle massif and gorges of Osmand Plateau.

\* *Acacia orthocarpa* F.Muell. KM 722

Open shrub to 1 m; phyllodes erect, slightly curved; flowers in yellow spikes. At Winnama Gorge.

\* *Acacia pellita* O.Schwarz

Shrub to 7 m. (F&K Winnama Gorge, Wulwuldji.)

*Acacia perryi* Pedley KM 720, 835

Open shrub to 1.5 m; bark reddish-brown with prominent lenticels and leaf-scars; phyllodes whorled, grey-green; flowers golden; fruit viscid. On rocky hillside with *Eucalyptus brevifolia* open woodland above Winnama Gorge.

\* *Acacia platycarpa* F.Muell. IDC 804

Shrub to 4 m, branches white, broad curved phyllodes, pale globular flowers. On sandplain surrounding Bungle Bungle massif and on river levees. Fruits baked and eaten (Scarlett 1985).

\* *Acacia plectocarpa* Cunn. ex Benth. KM 518, 736; IDC 962

Slender tree to 6 m; fibrous grey bark; phyllodes rich shiny green; fruit shiny, sticky and wrinkled. On river levees and in gorges of Osmand Plateau.

\* *Acacia retivenia* F.Muell. KM 521

Open shrub to 3 m, bark smooth and grey, large globular flowerheads. On sandstone hillside at Site 6.

*Acacia* aff. *retivenia* KM 490, 806

Open shrub to 4 m, branchlets pubescent, flowerheads large. On Bungle Bungle plateau and sandstone breakaways along Ord River valley.

\* *Acacia stipuligera* F.Muell. KM 489, 771; IDC 808, 873

Shrub to 3 m, broad-triangular stipules at base of phyllodes, flowers in golden spikes. On Bungle Bungle Plateau and surrounding sandplains, can form dense thickets.

\* *Acacia translucens* Cunn. ex Hook.

Low shrub to 0.5 m. (F&K Winnama Gorge.)

\* *Acacia tumida* F.Muell. ex Benth. KM 491, 836; IDC 795

Shrub or small tree to 4 m, stems and leaves glaucous, flowers in yellow spikes, fruits wrinkled and brown. Widespread on river levees, sandplains, flats and in drainage lines on Bungle Bungle Plateau. Edible gum, green fruits used as fish poison, stems used to make spears and pegs of woomeras (Scarlett 1985).

\* *Acacia* sp. subseries *Lycopodiifoliae*

Open shrub to 1.5 m. (F&K quartzite outcrop and sandstone scree slopes.)

*Acacia* sp. subgenus *Acacia*, section *Bipinnatae* KM 697

Tree to 6 m; bark grey-yellow, deeply fissured; bi-pinnate leaves; flat woody fruits. On limestone hillsides in Osmand Valley.

*Dichrostachys spicata* (F.Muell.) Domin KM 451, 519

Spiny shrub to 3 m, branches smooth and cream, flowers in a yellow and mauve spike. On river levees and broad plains.

*Neptunia dimorphantha* Domin KM 403

Prostrate herb with bi-pinnate leaves and oval, flat fruits. On river levees and flats.



## MOLLUGINACEAE

- \* *Glinus oppositifolius* (L.) DC. KM 823  
Trailing herb, flowers white, fruit green. In sandy ephemeral watercourse, Cathedral Gorge.

## MORACEAE

- \* *Ficus coronulata* F.Muell. KM 812  
Multi-stemmed tree to 6 m with drooping branches, narrow pendulous leaves and round green fruit. Subdominant in riparian forests along major watercourses. Fruits eaten raw (Scarlett 1985).

- \* *Ficus leucotricha* Miq. KM 742  
Small tree with smooth grey bark and hairy yellow fruits. On rock faces in sandstone gorges of Bungle Bungle massif and Osmand Plateau.

- \* *Ficus opposita* Miq. KM 677  
Small tree to 4 m; bark dark, deeply fissured; sandpaper-like leaves; fruits small and green. In drainage lines of sandstone breakaways, on limestone outcrops and in riparian forest. Fruits eaten raw (Scarlett 1985).

- \* *Ficus platypoda* (Miq.) Cunn. ex. Miq.  
Small spreading tree to 4 m with aerial and clinging roots; bark smooth and pale grey. On sandstone cliffs and breakaways. Fruits eaten raw (Scarlett 1985).

- \* *Ficus racemosa* L. KM 703  
Large spreading tree to 10 m; trunk buttressed at base; large clusters of fruits borne on trunk and main branches. On banks of major watercourses. Fruits eaten raw (Scarlett 1985).

- \* *Ficus tinctoria* G.Forster KM 785  
Spindly tree with smooth pale grey bark, fruit orange. On sandstone cliff at Wulwuldji. (F&K alluvium by creek.)

- \* *Ficus virens* Aiton  
Tree with aerial roots, bark smooth, light grey. Beside permanent watercourse in Bream Gorge. (F&K Mawundungi.) Fruits eaten raw (Scarlett 1985).

## MYOPORACEAE

- Eremophila longifolia* (R.Br.) F.Muell. KM 449  
Shrub to 3 m with drooping branches and narrow pendulous leaves. In *Acacia farnesiana* shrubland on broad plain above Ord River at Goosehole Yard.

- \* *Myoporum acuminatum* R.Br.  
Shrub to 2 m, flowers white and mauve, fruits maroon. (F&K boulder slopes of Bungle Bungle massif.)

## MYRTACEAE

- \* *Calytrix achaeta* F.Muell. KM 458, 892; IDC 835, 858  
Dense shrub to 1.5 m with cream flowers. In gorges of Bungle Bungle massif and sandstone breakaways fringing Ord River valley.

- \* *Calytrix brownii* (Schauer) L.A.Craven  
Shrub to 1.5 m with white flowers. Previously named *C. brachychaeta*. (F&K Winnama Gorge.)

- \* *Calytrix exstipulata* DC. KM 466, 469, 857; IDC 919  
Shrub to 1.5 m with bright pink flowers. Common on sandstone substrates.

- \* *Eucalyptus aspera* F.Muell. KM 487, 511, 741  
Tree to 8 m with smooth grey bark and sessile opposite grey-green leaves. Along watercourses of sandstone plateaux and breakaways.

- \* *Eucalyptus brachyandra* F.Muell. IDC 877  
Straggly crooked tree to 5 m; bark grey and fibrous on trunk, smooth and cream on branches. On boulder slopes of Bungle Bungle massif and sandstone gorges.

- \* *Eucalyptus brevifolia* F.Muell. KM 509  
Small tree to 5 m, bark smooth and white, branchlets yellow, leaves grey-green. Dominant on rocky slopes and skeletal soils. Leaves used in earth oven, wood used for firewood (Scarlett 1985).

- \* *Eucalyptus* sp. aff. *brevifolia* F.Muell. 'Silvery'  
Tree to 5 m with smooth white bark and silvery shoots. (F&K Turkey Creek catchment.)

- \* *Eucalyptus* sp. aff. *brevifolia* F.Muell. 'Grey-green'  
Tree to 5 m with smooth white bark and large fruits. (F&K on rocky slope.)

- \* *Eucalyptus camaldulensis* Dehn. IDC 826, 827, 869  
Tree to 10 m with white smooth bark. Subdominant on sandy banks of major watercourses. Leaves used as fish poison, for lining earth ovens and in steaming treatment for colds. Wood prized as firewood (Scarlett 1985).

- Eucalyptus clavigera* Cunn. ex Schauer KM 513  
Tree to 8 m, bark grey and tessellated on lower trunk, smooth and white above; leaves glabrous. On sandy bank beside ephemeral watercourse, Osmand Creek.

- Eucalyptus chlorophylla* Brooker & Done KM 512, 798  
Tree to 10 m with thick, wavy bark persistent to smallest branches. Subdominant on flats and drainage lines in Osmand Valley and at Site 6.

\* *Eucalyptus cliftoniana* W.Fitzg. ex Maiden KM 516, 759; IDC 838

Tree to 10 m with thick tessellated golden-brown bark and woody globular fruits. Dominant on Bungle Bungle Plateau and Osmand Range .

\* *Eucalyptus collina* W.Fitzg. KM 455, 772

Tree to 10 m, bark white with scaly orange-brown patches on trunk, new growth silvery. Dominant on sandplains surrounding Bungle Bungle massif; codominant on sandstone slopes and breakaways.

\* *Eucalyptus confertiflora* F.Muell. KM 692

Tree to 15 m with spreading crown; bark grey and tessellated on lower trunk, smooth and white above; leaves hairy. Common on river levees and flats. Firewood (Scarlett 1985).

\* *Eucalyptus cupularis* C.Gardner KM 454, 830

Tree to 5 m with spreading crown; bark smooth, white, powdery; leaves pendulous. In sand banks beside ephemeral watercourses on Bungle Bungle Plateau and at base of massif. (F&K Osmand Range.)

\* *Eucalyptus* aff. *dichromophloia* F.Muell. KM 468

Tree to 10 m, bark white with darker flakes, new growth yellow-green. On rocky slopes. Firewood, ash mixed with bush tobacco, *Nicotiana benthamiana* (Scarlett 1985).

\* *Eucalyptus herbertiana* Maiden

Crooked tree to 6 m. (F&K Bungle Bungle Plateau.)

*Eucalyptus microtheca* F.Muell. KM 807

Tree to 16 m; bark brown and fissured on trunk, smooth and cream on branches; leaves pendulous. Dominant on banks of Ord River at Kitty's Knob. This species typically has fibrous bark throughout; partially smooth-barked specimens may be an unnamed species.

*Eucalyptus opaca* D.Carr & S.Carr KM 510, 840

Tree to 8 m with spreading crown; bark grey-orange, thick on trunk, smooth and cream on branches. On rocky hillsides and plains.

\* *Eucalyptus* aff. *papuana* F.Muell. KM 693

Tree to 10 m with smooth white bark, pendulous branchlets and narrow leaves. On river levees and flats along major watercourses.

\* *Eucalyptus* sp. aff. *papuana* F.Muell. KM 514, 515, 813; IDC 784

Tree to 8 m with smooth white bark and large leaves. Occasional on low rocky hills and sandplains surrounding Bungle Bungle massif.

\* *Eucalyptus pruinosa* Schauer KM 499, 803

Small tree to 6 m with rough fibrous bark and stalkless bluish leaves. Dominant on clayey flats and poorly drained depressions, occasional on low rocky hills. Firewood (Scarlett 1985).

\* *Eucalyptus* sp. aff. *pruinosa* Schauer

Tree to 6 m with pruinose, silver-blue leaves. (F&K clay-loam plain and calcareous red earths.)

\* *Eucalyptus ptychocarpa* F.Muell. KM 834

Tree to 8 m with spreading branches and rough fibrous bark. On low-lying plains along Osmand Valley and tributaries.

\* *Eucalyptus* sp. aff. *terminalis* F.Muell.

Tree to 10 m, bark tessellated below, smooth above. (F&K west of Bungle Bungle massif.)

\* *Eucalyptus* sp. nov. 'Box'

Tree to 8 m, bark fibrous. (F&K alluvium and sandstone scree.)

\* *Leptospermum parviflorum* Valetton KM 668, 748

Tree to 8 m with reddish-brown peeling bark and pendulous branchlets. Common on sandy banks of permanent watercourse at Bream Gorge and occasional in Piccaninny Gorge.

\* *Lophostemon grandiflorus* (Benth.) Peter G. Wilson & J.T. Waterhouse KM 711

Tree to 10 m; bark rough, hard, dark; flowers cream. Dominant along ephemeral watercourses of low rocky hills and plains. Firewood, bark used for artefacts (Scarlett 1985).

*Melaleuca acacioides* F.Muell.

Recorded by Scarlett (1985).

\* *Melaleuca leucadendra* (L.) L. KM 504, 505, 506, 788

Tree to 20 m with white papery bark, pendulous branchlets and cream flowers. Dominant to codominant along major watercourses. Leaves used for steaming treatment of colds. Bark used to make shelters, blankets and for wrapping food (Scarlett 1985).

\* *Melaleuca nervosa* (Lindley) E.Cheel KM 508; IDC 878

Small tree to 5 m with grey papery bark and green flowers. In poorly-drained depressions along Osmand Valley and at Site 6.

*Melaleuca viridiflora* Sol. ex Gaertner KM 507, 522

Slender tree to 6 m with cream papery bark and broad dark green leaves. In moist drainage line at Site 6 and on sand bank in Piccaninny Gorge.

\* *Syzygium angophoroides* (F.Muell.) B.Hyland KM 702  
Tree to 10 m with papery or fissured reddish bark and cream flowers. Subdominant in closed forests of Osmand Valley and Winnama Gorge.

\* *Syzygium eucalyptoides* (F.Muell.) B.Hyland KM 494  
Spreading tree to 8 m with pendulous leaves drooping to ground and white flowers. In riparian forest at Blue Holes.

#### NYCTAGINACEAE

\* *Boerhavia paludosa* (Domin) Mickle  
Tangled herb to 1.3 m. (F&K Winnama Gorge, Piccaninny Gorge.)

*Boerhavia* sp. KM 406, 884; IDC 793  
Prostrate annual herb, flowers mauve, fruit sticky. In sandy soils on river levees and plains.

#### NYMPHEACEAE

*Nymphaea violacea* Lehm. KM 602  
Perennial aquatic herb with floating roundish leaves and emergent purple flowers. In permanent pool near Mt. John.

#### OLEACEAE

*Jasminum didymum* Forster f. KM 680, 855  
Multi-stemmed shrub to 2 m, bark grey, fruit black. On limestone ridges.

\* *Jasminum molle* R.Br.  
Semi-shrub to 0.5 m. On bank of drainage line through sandstone breakaway at Kitty's Knob. (F&K Red Rock Creek.) Fruits eaten raw (Scarlett 1985).

#### ONAGRACEAE

\* *Ludwigia octovalvis* (Jacq.) Raven KM 626, 669  
Open shrub to 2 m with yellow flowers and tubular red and green fruit. In moist sand beside major watercourses.

\* *Ludwigia perennis* L. KM 605; IDC 916  
Annual herb to 0.6 m. In sandy ephemeral watercourses.

#### OPILIACEAE

\* *Opilia amentacea* Roxb.  
Scandent shrub to 4 m. (F&K Giliwal.) Fruits eaten raw (Scarlett 1985).

#### PASSIFLORACEAE

\* *Passiflora foetida* L. KM 847  
Sprawling climber to 4 m with round orange fruits. In riparian forest along major watercourses.

#### PEDALIACEAE

*Josephinia eugeniae* F.Muell. KM 424  
Prostrate herb with mauve flowers. In sandy clay loam of broad plains above Ord River at Goosehole Yard.

\* *Josephinia* sp. nov.  
Subshrub to 0.5 m, flowers mauve. (F&K Winnama Gorge.)

#### PITTOSPORACEAE

\* *Citriobatus spinescens* (F.Muell.) Druce KM 727, 792  
Multi-stemmed shrub to 3 m, branchlets spine-tipped, fruits pale yellow. On rocky slopes adjacent to permanent watercourses at Winnama Gorge and Wulwuldji.

#### POLYGALACEAE

\* *Comesperma secundum* Banks ex DC. KM 464  
Open slender shrub to 1 m, bark smooth and brown, branchlets pruinose, leaves blue-green. On Bungle Bungle Plateau. Recorded by Forbes and Kenneally as *Comesperma* sp. nov.

\* *Polygala linarifolia* Willd.  
Annual herb. Previously named *P. chinensis*. (F&K Piccaninny Gorge.)

*Polygala* sp. IDC 904  
Erect herb to 0.3 m with linear leaves and blue flowers. In alluvial sand of ephemeral watercourse at Bull Creek.

#### POLYGONACEAE

\* *Persicaria barbatum* (L.) H.Hara KM 789  
Erect herb to 1 m with cream flowers. In damp loam beside permanent watercourse at Wulwuldji. Previously named *Polygonum barbatum*.

#### PORTULACACEAE

\* *Calandrinia* sp.  
Sprawling succulent herb, flowers pink. (F&K Piccaninny Gorge.)

\* *Portulaca ? intraterranea* J.Black  
Herb to 0.1 m. (F&K Winnama Gorge.)

*Portulaca pilosa* L. KM 624  
Prostrate annual herb with reddish stems and yellow flowers. In sandy soils along watercourses, flats and lower slopes.

\* *Portulaca ? pilosa* L.  
Succulent herb to 0.1 m, flowers pinkish-yellow. (F&K Piccaninny Gorge.)

\* *Portulaca* sp.  
Succulent dwarf herb, flowers orange. (F&K Piccaninny Gorge.)

#### PROTEACEAE

\* *Grevillea agrifolia* Cunn. ex R.Br. KM 749  
Shrub to 4 m with dark rough bark, toothed bluish-green leaves and cream flowers. In sandy soil beside watercourses in Osmand Valley.

*Grevillea byrnesii* KM 534, 535, 837; IDC 918  
Slender shrub to 4 m, toothed leaves, flowers red. On Bungle Bungle Plateau and surrounding sandplains.

*Grevillea dimidiata* KM 532  
Tree to 6 m; bark black, rough; leaves thick, wavy. On rocky hills at Blue Holes.

*Grevillea mimosoides* R.Br. KM 787  
Tree to 8m; bark thick, corky; leaves clustered at ends of branchlets; fruits coated with brown caustic sticky substance. Occasional on river levees.

\* *Grevillea miniata* W.Fitzg. KM 488; IDC 788  
Slender erect shrub to 4 m, toothed felty grey-green leaves, flowers orange. Common on Bungle Bungle Plateau and surrounding sandplain. Stems used to make spears and pegs of woomeras (Scarlett 1985).

\* *Grevillea psilantha* McGillivray KM 473, 536, 818  
Low shrub to 1 m, leaves silvery-green, flowers cream. On precipitous walls of Piccaninny and Cathedral Gorges.

*Grevillea pteridifolia* Knight  
Stems used for making spears, ash from bark used on hair (Scarlett 1985).

\* *Grevillea pyramidalis* Cunn. ex R.Br. KM 531, 533  
Small tree to 4 m with rough, dark bark and cream flowers. On low rocky hills and elevated plains. Wood used for boomerangs (Scarlett 1985).

\* *Grevillea refracta* R.Br. KM 537; IDC 782, 900  
Slender shrub to 4 m, silvery-green divided leaves, reddish-yellow to orange flowers. On Bungle Bungle Plateau and surrounding sandplains and in sandstone gorges of Osmand Valley and Winnama Gorge.

*Grevillea striata* R.Br. KM 802  
Small tree to 5 m; bark hard, dark, furrowed; strap-like, silvery-green leaves; flowers cream. In *Lysiphyllum cunninghamii* woodland on plain above Ord River at Kitty's Knob.

*Grevillea wickhamii* Meissner KM 530, 856  
Slender shrub to 3 m, toothed leaves, flowers red. On Bungle Bungle Plateau and low rocky hills.

\* *Grevillea* sp. aff. *wickhamii* Meissner KM 465; IDC 925  
Slender tree to 4 m, toothed leaves, flowers red with black perianth lobes. On Bungle Bungle Plateau and surrounding sandplain.

\* *Hakea arborescens* R.Br. KM 682; IDC 917  
Gnarled tree to 4 m with black, deeply fissured bark and cream flowers. Common on sandstone breakaways, limestone ridges and flats. Wood used for boomerangs, fighting clubs (Scarlett, 1985).

*Hakea suberea* S.Moore KM 923  
Gnarled tree to 5 m with deeply fissured bark and long needle-like leaves. On plain above Ord River at Kitty's Knob and on rocky hills in Osmand Valley.

\* *Persoonia falcata* R.Br. SR  
Small tree to 4 m, bark brown and flaky, flowers yellow. On river levees and sandplains surrounding Bungle Bungle massif. Fruits eaten raw (Scarlett 1985).

\* *Stenocarpus* sp. A (FoK)  
Refers to species named *S. salignus* by Forbes and Kenneally. (F&K Piccaninny Gorge.)

#### RHAMNACEAE

\* *Ventilago viminalis* Hook. SR  
Small tree to 4 m; bark dark, fissured; leaves narrow, pendulous. Beside ephemeral watercourse at Goosehole breakaway. (F&K Bungle Bungle Outcamp.) Wood used for boomerangs (Scarlett 1985).

\* *Ziziphus quadrilocularis* F.Muell. KM 701  
Open shrub to 2 m with paired spines at leaf bases. In coarse sand beside permanent watercourse at Winnama Gorge. Includes Forbes and Kenneally *Z. oenoplia*. Edible 'skin' on baked fruit (Scarlett 1985).

#### RHIZOPHORACEAE

\* *Carallia brachiata* (Lour.) Merr. KM 862  
Tree to 6 m with horizontal branches and pale corky bark. In riparian closed forest at Winnama Gorge. (F&K Osmand Valley.)

#### RUBIACEAE

\* *Canthium attenuatum* R.Br. ex Benth.  
Tree to 6 m with grey-black fissured bark. (F&K Bungle Bungle Outcamp.)

\* *Gardenia pyriformis* Cunn. ex Benth.  
Tree to 4 m with flaky mottled yellow bark. (F&K Bungle Bungle massif, Winnama Gorge.)

*Gardenia* sp. KM 731, 864  
Small tree to 5 m, soft flaky yellow-brown bark, flowers white and sweet smelling. At base of Bungle Bungle massif and on rocky slope at Winnama Gorge.

*Hedyotis* sp. KM 846  
Erect annual herb to 0.2 m. On sand plains surrounding Bungle Bungle massif and in associated gorges.

\* *Hedyotis crouchiana* (F.Muell.) F.Muell.  
Spreading herb to 0.1 m. Previously named *Oldenlandia crouchiana*. (F&K Piccaninny Gorge.)

\* *Hedyotis galioides* (F.Muell.) F.Muell.  
Diffuse herb to 0.5 m. Previously named *Oldenlandia galioides*. (F&K Piccaninny Gorge.)

\* *Hedyotis mitrasacmoides* (F.Muell.) F.Muell.  
Delicate erect herb to 0.3 m. Previously named *Oldenlandia mitrasacmoides*. (F&K Piccaninny Gorge.)

\* *Nauclea orientalis* (L.) L. SR  
Tree to 15 m, bark pale, dense crown of large glossy leaves. In riparian closed forest near Wulwuldji and near Mt. John. Fruits eaten raw (Scarlett, 1985).

\* *Pavetta brownii* Bremek. KM 737  
Shrub 2 m with peeling brown bark and white flowers. On sandstone slope at Winnama Gorge. (F&K Osmand Valley, Piccaninny Gorge.)

\* *Timonius timon* (Sprengel) Merr. KM 710  
Tree to 6 m, bark grey, tubular white flowers, round green fruits. In riparian forest of Osmand Valley, Winnama Gorge and near Mt. John. Wood used for boomerangs and woomeras (Scarlett 1985).

#### RUTACEAE

\* *Boronia* ? *pauciflora* W.Fitzg.  
Low shrub to 0.5 m, flowers pink. (F&K Winnama Gorge.)

\* *Euodia elleryana* F.Muell. KM 733, 794  
Tree to 15 m; bark yellow, corky; glossy trifoliolate leaves. In riparian forest beside permanent watercourses in Osmand Valley, Winnama Gorge and near Mt. John.

#### SANTALACEAE

*Exocarpos latifolius* R.Br. KM 791  
Multi-stemmed shrub to 4 m; bark dark, hard, rough; broad glossy leaves; fruit with swollen fleshy receptacle. On river levee at Wulwuldji Spring.

\* *Santalum lanceolatum* R.Br. KM 436, 675, 681; IDC 829  
Pendulous shrub to 3 m, leaves glaucous, flowers cream. Widespread in drainage lines on sandplains and low rocky hills, on limestone ridges, river levees and on Bungle Bungle Plateau. Leaves used in steaming treatment of colds (Scarlett 1985).

#### SAPINDACEAE

\* *Atalaya hemiglauca* (F.Muell.) F.Muell. ex Benth. KM 714  
Small tree to 10 m, bark pale grey, bluish-grey pinnate leaves, winged papery fruits. On river levees, drainage lines on low rocky hills and limestone ridges. Wood used for fighting sticks (Scarlett 1985).

*Cardiospermum halicacabum* L. KM 604  
Prostrate herb to 1 m, inflated three-winged fruits. In sandy bed of Ord River at Blue Holes.

\* *Distichostemon hispidulus* (Endl.) Baillon KM 493, 688; IDC 921  
Spindly shrub to 2 m, hairy prominently winged fruits. In drainage lines on Bungle Bungle Plateau, on sandstone slope near Mt. John, in gorges of Osmand Valley and at base of sandstone hill at Site 6.

*Dodonaea coriacea* (Ewart & Davies) McGillivray KM 676  
Shrub to 1.5 m, toothed wedge-shaped leaves, three-winged fruits. On sandstone slope at Goosehole breakaway.

\* *Dodonaea lanceolata* F.Muell. KM 724  
Shrub to 2 m, bark peeling in orange strips, three-winged fruits. In alluvial sand beside permanent watercourse at Winnama Gorge and on top of Mt. John. (F&K slopes of Bungle Bungle massif.)

\* *Dodonaea polyzyga* F.Muell. KM 450, 685  
Shrub to 2 m with viscid stems, leaves and fruit; bark peeling in reddish strips. On rocky hills and limestone outcrops. Implement made from dried stems used for shaping spearheads (Scarlett 1985).

\* *Dodonaea viscosa* Jacq. KM 739  
Slender shrub to 2 m, leaves very shiny green, papery three-winged fruits. On sandstone slopes at Winnama Gorge and gorges in Osmand Valley. (F&K slopes of Bungle Bungle massif.)

#### SAPOTACEAE

\* *Planchonella arnhemica* (F.Muell. ex Benth.) Royen  
Tree to 8 m with dark grey corky bark. (F&K at base of Bungle Bungle massif.)

## SCROPHULARIACEAE

*Bacopa floribunda* (R.Br.) Wettst.  
Identified after publication of Forbes and Kenneally (1986).

\* *Buchnera ramosissima* R.Br.  
Subshrub to 0.8 m, flowers mauve. (F&K Piccaninny Gorge.)

*Limnophila fragrans* (Forster f.) Seemann KM 621  
Trailing herb, flowers white. In moist soil beside permanent watercourse near Mt. John.

*Lindernia* sp. nov. KM 480, 820  
Cascading herb, flowers mauve with darker streaks and white throat. On sandstone walls of Bungle Bungle massif.

\* *Stemodia grossa* Benth.  
Low soft herb to 0.2 m, flowers purple. (F&K south-west of Bungle Bungle Outcamp, Tickalara Track.)

\* *Stemodia lythrifolia* F.Muell. ex Benth. KM 649, 725; IDC 844  
Erect aromatic herb to 0.3 m with square stems and mauve flowers. In drainage lines of sandstone slopes and breakaways and on Bungle Bungle massif.

\* *Stemodia viscosa* Roxb. KM 776  
Erect aromatic sticky herb to 0.3 m, flowers mauve. In rocky ephemeral watercourse, Red Rock Creek. (F&K Bungle Bungle massif.)

\* *Stemodia* sp.  
Clumped pendulous herb, flowers mauve. (F&K Piccaninny Gorge.)

*Stemodia* sp. KM 623  
Dense pendulous, viscid, aromatic herb with purple flowers. On cliff walls of Bungle Bungle massif at Piccaninny Gorge.

## SIMARUBACEAE

\* *Brucea javanica* (L.) Merr. KM 718, 754  
Open shrub to 2 m, leaves clustered at ends of branchlets, small green flowers on long erect terminal racemes. In sandstone gorges of Osmand Valley and Bungle Bungle massif.

## SOLANACEAE

# *Datura inoxia* Miller KM 407  
Hairy low shrub with large white flowers and round spiny fruits on curved stem. In alluvial sand of Osmand Creek.

\* *Nicotiana benthamiana* Domin KM 849, 850  
Erect herb to 0.3 m with thin odorous leaves and white flowers. In sheltered sandstone overhang at Piccaninny Gorge. (F&K limestone at Red Rock Creek.) Bush tobacco, dried leaves chewed with ash (Scarlett 1985).

*Solanum carduiforme* F.Muell.  
Identified after publication of Forbes and Kenneally (1986).

*Solanum dioicum* W.Fitzg. KM 925  
Small shrub to 0.5 m with dense golden tomentum and spines on stems and main leaf veins, flowers mauve. Occasional on rocky lower slopes.

\* *Solanum* sp. aff. *dioicum* W.Fitzg  
Low shrub to 0.6 m. (F&K Winnama Gorge.)

\* *Solanum echinatum* R.Br. KM 498  
Very spiny subshrub to 0.5 m, flowers mauve. On degraded clay flat at Blue Holes. (F&K Osmand Valley.) Fruits eaten raw (Scarlett 1985).

\* *Solanum lucani* F.Muell.  
Prickly low semi-shrub to 0.2 m. (F&K Wulwuldji, Winnama Gorge, Piccaninny Gorge.)

*Solanum* sp. F.Muell. KM 829  
Open spiny shrub to 1 m, leaves dissected, flowers purple. In gorges and associated outliers of Bungle Bungle massif.

\* *Solanum quadriloculatum* F.Muell.  
Low shrub. (F&K Winnama Gorge.)

## STACKHOUSIACEAE

\* *Stackhousia intermedia* Bailey  
Herb to 0.3 m. (F&K Winnama Gorge.)

## STERCULIACEAE

\* *Brachychiton diversifolius* R.Br. KM 666  
Tree to 10 m with dark, fissured bark, pendulous branchlets and green flowers with maroon streaks. On river levees of major watercourses. Green pods edible when baked, frayed sticks used for spooning out bush honey (Scarlett 1985).

\* *Brachychiton viscidulus* (W.Fitzg.) Guymer KM 734, 833  
Deciduous tree to 5 m, bark rough and dark, flowers red. On rocky hillsides in Osmand Valley and Winnama Gorge. (F&K slopes of Bungle Bungle massif.) Green pods edible when baked (Scarlett 1985).

*Melhanium oblongifolium* F.Muell. KM 396, 618, 686, 796  
Erect greyish shrub to 0.3 m with yellow flowers. On river levees and lower slopes.

*Melhania* sp. KM 924  
Erect subshrub to 0.3 m. On limestone outcrop at Site 6.

*Melochia pyramidata* L. KM 611  
Spindly erect shrub with reddish stems and inflated fruit.  
On river levees of major watercourses.

*Melochia* sp. KM 766  
Low spreading shrub to 0.5m, flowers pink. In sandy ephemeral watercourse at Bream Gorge.

*Waltheria indica* L. KM 815; IDC 790, 791  
Erect hairy subshrub to 0.5 m, flowers yellow. Widespread in sandy soils.

#### STYLIDIACEAE

\* *Stylidium muscicola* F.Muell.  
Flowers deep pink. (F&K Piccaninny Gorge.)

\* *Stylidium schizanthum* F.Muell.  
Small pink ephemeral. (F&K Winnama Gorge.)

#### TILIACEAE

*Corchorus aestuans* L. KM 881  
Annual herb on cracking clay plain at Kitty's Knob.

*Corchorus fascicularis* KM 882  
Annual herb on cracking clay plain at Kitty's Knob.

*Corchorus olitorius* L. KM 883  
Annual herb on cracking clay plain at Kitty's Knob.

\* *Corchorus sidoides* F.Muell. KM 658, 687; IDC 764, 899  
Erect open shrub to 1 m, leaves grey-green, flowers yellow. Widespread on river levees, limestone outcrops, sandstone breakaways and broad plains.

*Corchorus tridens* L. KM 395  
Prostrate annual herb with cylindrical fruits splitting into three parts, flowers yellow. On plains adjacent to major watercourses.

\* *Grewia polygama* Roxb. KM 866  
Open shrub with cream flowers. On river levee at Bream Gorge. (F&K Wulwuldji.) Fruits eaten raw (Scarlett 1985).

*Triumfetta* aff. *appendiculata* F.Muell. IDC 947  
Perennial shrub to 1 m. In *Eucalyptus papuana* woodland on river levee of Osmand Creek.

\* *Triumfetta glaucescens* (R.Br.) Benth.  
Slender shrub to 0.5 m. (F&K slope of Bungle Bungle massif.)

\* *Triumfetta plumigera* F.Muell. KM 799, 842  
Erect spindly semi-shrub to 0.5 m. On sandstone slopes.

*Triumfetta* sp. KM 839, 843  
Open shrub to 1.5 m, flowers yellow. On river levees and rocky lower slopes.

\* *Triumfetta* sp. IDC 879  
Open densely hairy shrub to 1.5 m, flowers yellow, fruit round with soft spines. Widespread on drainage lines and watercourses. Recorded by Forbes and Kenneally as *T. appendiculata*.

#### ULMACEAE

\* *Celtis philippinensis* Blanco KM 679, 858  
Small tree to 5 m with dense compact canopy; bark grey, smooth; leaves toothed; flowers pale yellow. On limestone outcrops.

\* *Trema tomentosa* (Roxb.) Hara KM 398, 698, 709  
Small tree to 3 m, bark brown, toothed leaves and clusters of small black fruits. In riparian forest along Osmand Creek and tributaries and Winnama Gorge.

#### VERBENACEAE

\* *Clerodendrum floribundum* R.Br. IDC 868  
Small tree to 3 m, furrowed pale bark, reddish new shoots and leaf stalks. On river levees in Osmand Valley and on sandplains surrounding Bungle Bungle massif.

\* *Clerodendrum tomentosum* (Vent.) R.Br. KM 713  
Slender tree to 2 m, bark grey and fissured, ripe fruits purple. In sandstone gorges of Osmand Valley, Bungle Bungle massif and Winnama Gorge.

\* *Premna acuminata* R.Br.  
Small tree to 3 m, bark grey, broad leaves with pointy tip. On limestone outcrops. Stems used to make fire sticks (Scarlett 1985).

\* *Vitex glabrata* R.Br. KM 715  
Small tree to 5 m, bark grey and fissured, flowers cream and mauve. In sandstone gorges of Osmand Valley, Bungle Bungle massif and Winnama Gorge. Fruits eaten raw (Scarlett 1985).

#### VIOLACEAE

\* *Hybanthus aurantiacus* (F.Muell. ex Benth.) F.Muell. KM 617; IDC 794, 911  
Erect shrub to 1 m, toothed leaves, flowers orange. Widespread on river levees, limestone outcrops, low rocky hills and sandplains.

## ZYGOPHYLLACEAE

\* *Tribulopsis angustifolia* R.Br. IDC 820

Prostrate herb with yellow flowers. In sandy ephemeral watercourse at Bull Creek. Recorded by Forbes and Kenneally as *Tribulopsis* sp. (F&K Piccaninny Gorge.)

*Tribulopsis pentandra* R.Br. KM 777

Prostrate herb with reddish stems and yellow flowers. In rocky ephemeral watercourse at Red Rock Creek.

*Tribulus terrestris* L. KM 625

Prostrate herb with orange stems and yellow flowers. In sandy ephemeral watercourse at Blue Holes.

## DISCUSSION

### Comparison of floristic classification with that of Forbes and Kenneally (1986)

We classified the vegetation of the Bungle Bungle area into seventeen communities defined on floristics. Many of these are directly comparable to those of Forbes and Kenneally (1986). We have no direct comparison for Forbes and Kenneally's community 1.6 (ephemeral streams draining scree and boulder slopes and gorges of the Bungle Bungle massif) or 4.2 (scree and boulder slopes of the Bungle Bungle massif) although parts of these may be found in our groups 15 and 16. We have differentiated the sandplain vegetation (Forbes and Kenneally unit 3.2) into three separate groups (8, 9, 17).

Both the Osmand Plateau and Osmand Ranges require further investigation. Forbes and Kenneally give a brief description of the community 5.2 (Osmand Plateau and surrounds), however, no collections were made. The vegetation of the Osmand Plateau (not visited by us) may be comparable to our group 14 describing the Osmand Ranges to the east.

### Biogeographic comparisons

Bowman *et al.* (1988) used the survey results of Forbes and Kenneally (1986) in their examination of the regional floristic similarity of Gregory National Park. They calculated similarity between the Bungle Bungle area and Gregory as 37 per cent (based on an index using number of species in common/the lower species tally of the two areas considered), although a recalculation using their data showed that this should have been 43 per cent. Including the data from our survey, the similarity is higher (47 per cent), and approaches the highest recorded by Bowman *et al.*, that of 53 per cent between Keep River and Gregory.

This suggests that there is a distinct component of the flora of the East Kimberley-Victoria River region, and hence that sites in this region have relatively low floristic similarity with that of the higher rainfall Top End (Litchfield, Katherine Gorge and Alligator River Region). Further analysis to examine the biogeographic affinities of the Bungle Bungle flora is desirable, but will require a thorough matching of the nomenclature used in Kimberley surveys and Northern Territory surveys. The interpretation of such comparisons is limited by differences in survey methodology and thoroughness (e.g. collecting in the wet season).

We also compared the floristic richness found in our survey of the Bungle Bungle area with that of other surveyed areas in north-western Australia (Prince Regent River, Drysdale River, Mitchell Plateau, Dampier Peninsula, 'Darwin and Gulf Districts', Victoria River Districts and Kakadu, Keep River, Katherine Gorge and Litchfield National Parks) using data presented in Lazarides *et al.* (1988) and Bowman *et al.* (1988). Species tallies are presented against area on a log-log scale in Figure 7, which also shows the regression line calculated by Lazarides *et al.* (1988). The Bungle Bungle flora is marginally richer than expected based on survey area, suggesting either an unusually thorough survey, or a flora which is relatively rich in comparison with other sites in monsoonal Australia. There is a weak trend for sites with higher rainfall to have greater species richness (correlation between rainfall and departure from regression line:  $r = 0.37$ ,  $p > 0.05$ ), and the Bungle Bungle area is the only relatively dry (mean annual rainfall <1000 mm) site having more plant species than expected, based on the regression equation of Lazarides *et al.* (1988). In terms of the sites available for comparison in north-western Australia, the Bungle Bungle area has a floristic richness slightly greater than expected based on area, and this richness is especially unusual given the relatively low rainfall.

We speculate that the occurrence of mesic habitats in the chasms and gorges, in an otherwise dry environment, contributes to this richness.

### Wet Season Collecting

Further collecting during the mid to late wet season would substantially increase our understanding of the flora, as many plants are only fertile during this period and ephemeral species are most easily detected then.

We did not collect during the wet season although Forbes and Kenneally record some ephemeral species collected by Marion Blackwell in early April 1985.



## Gymnosperms and Pteridophytes

Gymnosperms make up a very small proportion of the flora of the Bungle Bungle area as has been reported for the Kimberley and Cape York (Clarkson and Kenneally 1988).

Ferns and fern allies represent 2.8 per cent of the native vascular species recorded in the Bungle Bungle area (2.7 per cent for the Kimberley). At the family level ferns form a larger segment of the flora, representing 11.4 per cent of the families in the Bungle Bungle area (12.8 per cent of the Kimberley).

The richness of the pteridophyte flora is surprising in an area with an annual rainfall of 600 mm and highlights the importance of the moist sheltered environments provided by the Osmand Valley and associated gorges and the chasms of the Bungle Bungle massif. Many of these pteridophytes are at their inland limit.

## Invasive Alien Species

Despite areas of invasion by alien species the Bungle Bungle area has a low overall occurrence of weeds. Seventeen species of invasive alien species representing 10 families were recorded in the Bungle Bungle area (Table 4). This represents 2.8 per cent of the total flora, compared with 10.5 per cent for Western Australia, 4.8 per cent for the Kimberley (Clarkson and Kenneally 1988), 5.2 per cent for the Northern Territory (Bowman *et al.* 1988) and 5.8 per cent for Kakadu (Cowie and Werner 1987).

The figure derived by us is in the lower part of the range for overseas continental reserves dominated by tropical savannas and dry woodlands (2.6 per cent to 8.8 per cent) (Macdonald and Frame 1988; Usher 1988) and lower than for reserves of arid vegetation (4.0 per cent to 9.2 per cent) (Loope *et al.* 1988).

Low figures for introduced species in Australia's tropics are considered by Clarkson and Kenneally (1988) to reflect the sparse settlement and land use patterns based on grazing of native pastures with minimal clearing. This is also true for the Bungle Bungle area.

In any area, the numbers of invasive alien species in a family is generally proportional to the global size of the family, with the exception of the Orchidaceae (Specht 1981; Williamson and Brown 1986; Esler and Astridge 1987). The three families Poaceae, Fabaceae and Asteraceae are often dominant in the invasive alien floras of tropical and other areas (Specht 1981; Cowie and Werner 1987; Clarkson and Kenneally 1988). These patterns do not hold completely for the Bungle Bungle area. Although the Poaceae accounts for 35 per cent of exotic species, no

introduced species of Fabaceae were detected and only one species (6 per cent) of the family Asteraceae was recorded. In common with Kakadu, the Malvaceae contributed more alien species than the Asteraceae.

A notable introduced species is *Datura innoxia*, not previously recorded in the Kimberley.

Of the invasive alien species in the Park, the perennial shrubs *Parkinsonia aculeata* and *Calotropis procera* appear the most significant from a conservation perspective. These species occur in dense stands on the banks of the Ord River and appear to have the potential to invade other riparian areas in the Park (e.g. Osmand Creek, Red Rock Creek). There is also a risk that invasive species occurring elsewhere in northern Australia may be inadvertently introduced to the Park by tourists. The most important of these include *Acacia nilotica*, *Cryptostegia grandiflora* (rubber vine), *Mimosa pigra*, *Parthenium hysterophorus*, *Tamarix aphylla* (tamarisk) and *Xanthium pungens* (noogoora burr) (Swarbrick 1983; Loope *et al.* 1988). Many of these species also favour riparian habitats.

Species with burrs, such as the annual grasses *Cenchrus biflorus* and *Cenchrus echinatus* and the native herb *Tribulus terrestris*, have the potential to infest campgrounds, to the detriment of Park visitors. These species can cause painful punctures of the skin and can puncture camping equipment (Holm *et al.* 1977).

Within the Bungle Bungle area, sandstone habitats and rocky hills remain relatively pristine with little disturbance by feral stock or invasion of introduced plant species. The major watercourses and associated plains suffer the greatest degradation and it is here that the introduced plant species are most prevalent.

## Distribution of notable species and conservation value

For convenience here we divide the Bungle Bungle area into eight broad environments.

### 1. Bungle Bungle massif

This unit is of high conservation value. Occurring in the sheltered habitats of the chasms and gorges are a number of rare or restricted species, new records for Western Australia, undescribed species and records of biogeographical significance.

Eyrean elements such as *Acacia* spp. and *Grevillea* spp. dominate the exposed Plateau while relicts of a wetter climate occur in the sheltered gorges. The rugged terrain and inaccessibility to feral stock has resulted in little degradation and the absence of exotic plant species.

Notable species include:

The fern *Taenitis pinnata* recorded by Forbes and Kenneally as a new record for Western Australia, otherwise known only from north-eastern Queensland. The undescribed palm *Livistona* sp. 'Victoria River' a species restricted to chasm floors and walls of the massif.

A collection of the resurrection grass *Micaira* sp. from the sandstone plateau of the massif extends the known range of this interesting genus. It has a disjunct distribution including the northern Kimberley, the Darwin region of the Northern Territory, and Queensland. Its presence on the Bungle Bungle Plateau significantly extends its range inland.

The daisy *Erigeron ambiguus* collected from ephemeral watercourses on the Bungle Bungle Plateau is a new record for Western Australia. It is known from the Barkly and Darwin regions of the Northern Territory.

The second collection of *Blumea pungens* was made from a gorge of the Bungle Bungle massif by Forbes and Kenneally. Our survey discovered a third locality for this rare species on the Osmand Plateau.

The chasm walls of the massif support a number of species not known from any other habitat, including *Grevillea psilantha*, *Lindernia* sp. nov. and *Stemodia* sp. nov. *Plectrachne* sp. nov. occurs both here and on sandstone substrates of the Osmand Plateau.

## 2. Sandplains surrounding the Bungle Bungle massif

An extensive broad plain surrounds the Bungle Bungle massif. Its vegetation ranges from *Eucalyptus collina* woodlands to *Acacia* tall shrublands (floristic groups 8,9,17). The shrub layer is dominated by Eyrean elements including *Acacia* spp. *Grevillea* sp. and the Fabaceae family. The distinctive shrub *Jacksonia odontoclada* was first recorded from Western Australia by Forbes and Kenneally's survey. *Grevillea byrnesii*, which also occurs on the Bungle Bungle Plateau, is a new record for Western Australia. The hummock grass *Triodia spicata* occurs as large pungent clumps in fire protected areas of the massif and surrounding sandplains. This species has not previously been recorded for the Kimberley and represents the northern range limit of this desert species.

## 3. Sandstone breakaways

Rugged breakaways occur to the south of the massif on the lower slopes of the Elder Land System. These abrupt rocky slopes form the boundary between the Buchanan sandplains and the Nelson Land Units of the Ord River valley. Several desert species not previously

recorded in the Kimberley occur here: the grass *Paraneurachne muelleri*, and the forbs *Ptilotus schwartzii* and *Streptoglossa decurrens*.

## 4. Osmand Valley and associated gorges

The permanent and semi-permanent watercourses associated with the Osmand Valley support closed forests. These represent the most south-easterly occurrence of such forest in Western Australia. The best example of this vegetation occurs in Winnama Gorge. Trees such as *Euodia elleryana*, *Syzygium angophoroides*, *Carallia brachiata* and *Ficus* spp. form a closed canopy over permanent watercourses. The understorey is characterized by sedges and ferns, many of them at their most south-easterly limit. Notable species include:

The sedge *Cyperus polystachyos*, recorded by Forbes and Kenneally as a new record for Western Australia;

The fern *Nephrolepis arida*, the second collection from the Kimberley;

The shrub *Breynia rhyngocarpa*, restricted to these sheltered gorges and not previously recorded in Western Australia. It is known to occur in the Darwin region of the Northern Territory;

The broader valley of the Osmand Creek itself supports tall forests of *Melaleuca leucadendra*. Populations of *Colocasia esculenta* are considered a valuable genetic resource (Forbes and Kenneally 1986). This species is widely distributed throughout the humid tropics but in the Kimberley it is restricted to a few localities. The introduced species *Datura innoxia*, found only in alluvial sand of the Osmand Creek, had not previously been recorded in the Kimberley;

The forb *Polycarpaea diversifolia* is also new for the Kimberley.

## 5. Osmand Ranges and Plateau

Our study describes one community (floristic group 14) from the Osmand Ranges, a low woodland of *Eucalyptus cliftoniana*. The shrub *Cajanus* sp. recorded here and on the sandplains surrounding the Bungle Bungle massif may be an undescribed species.

The Osmand Range has sheltered gorges supporting closed forest and in one such site we recorded the waterlily *Nymphaea violacea*, *Pandanus aquaticus*, the aquatic forb *Aponogeton elongatus*, and the fern *Ceratopteris thalictroides*. All these species are at their inland range limit.

The presence of feral pigs in the tributary of Osmand Creek near Mt. John poses a significant threat to these vulnerable sites.

#### 6. Limestone outcrops

Limestone outcrops occur on the northern side of Osmand Valley, the western side of the Bungle Bungle massif and in the south part of the Conservation Reserve. These outcrops support a low closed forest on favourable sites. An unidentified *Acacia* occurs on limestone in the Osmand Valley along with the rare shrub *Cajanus crassicaulis*.

#### 7. Rocky hills

Rugged hills occur with a range of rocky substrates throughout the Bungle Bungle area. Their floristic diversity is generally low. There is little degradation from erosion or introduction of exotic species. The hummock grass *Triodia inutilis* represents a new record for the Kimberley; it is known from the Victoria River and Barkly districts in the Northern Territory. *Eucalyptus opaca* forms low open woodlands on these undulating hills. This species has not previously been recorded in the Kimberley but is probably the same species as Forbes and Kenneally's '*Eucalyptus* aff. *terminalis*.'

#### 8. Ord River Valley

The Ord River valley is the most degraded environment in the Bungle Bungle area. The fine clays produce spectacular sheet and gully erosion when overgrazing

results in loss of vegetation. Much of this area is included in the Ord River Regeneration Reserve and exotic species such as *Aerva javanica* and *Cenchrus* spp. have been used to stabilize the soils. The banks are characterized in many places by large stands of the introduced shrubs *Parkinsonia aculeata* and *Calotropis procera*.

The plains of the Ord River valley are characterized by a high occurrence of annual grasses, increaser species and forbs which indicate a history of degradation and overgrazing. Perennial grasses such as *Astrelba squarrosa* are rarely seen and only *Chrysopogon fallax*, a species reasonably tolerant of overgrazing, could be described as commonly occurring, although only as scattered tussocks.

The riparian forest fringing the Ord River is significant though floristically depauperate compared with that of Osmand Valley. Our only records of *Eucalyptus microtheca* and *Syzygium eucalyptoides* occurred in this forest while *Grevillea striata* was found only on the adjacent plains.

The subshrubs *Abutilon leucopetalum* and *Tephrosia supina*, and the forb *Polymeria angusta* have not previously been recorded for the Kimberley.

The removal of much of the feral stock on these plains has reduced the grazing pressure, however, areas already bare of vegetation will continue to erode unless the soil can be stabilized.

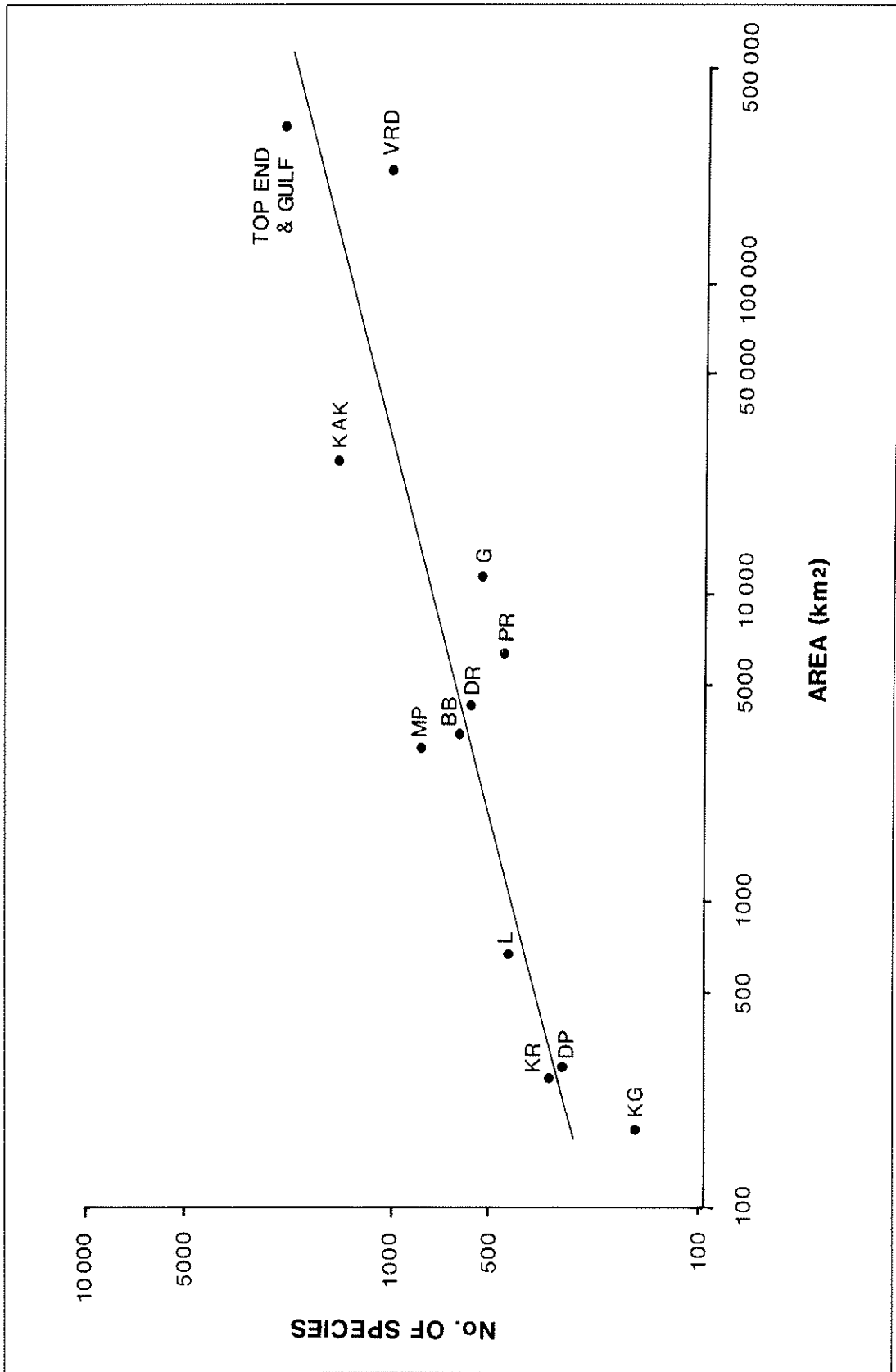


Figure 7

Regression of number of plant species against survey area for locations in north-western Australia (from Lazarides *et al.* (1988, with further data from Bowman *et al.* 1988). The line is that from Lazarides *et al.* Abbreviations: KG = Katherine Gorge, KR = Keep River, DP = Dampier Peninsula, L = Litchfield, MP = Mitchell Plateau, BB = Bungie Bungie, DR = Drysdale River, PR = Prince Regent River, G = Gregory, KAK = Kakadu, VRD = Victoria River District.

**Table 4**

Introduced plant species recorded in the Bungle Bungle area. Floristic groups (see pp 16-20) in which they are recorded are listed in order of decreasing frequency of occurrence in quadrats.

<i>Species</i>	<i>Floristic Group</i>
POACEAE	
<i>Cenchrus biflorus</i>	4
<i>Cenchrus ciliaris</i>	6, 7, 4, 12
<i>Cenchrus echinatus</i>	7, 4, 10
<i>Cenchrus setigerus</i>	6, 3
<i>Chloris inflata</i>	3
<i>Echinochloa colona</i>	4, 6, 7
AMARANTHACEAE	
<i>Aerva javanica</i>	7, 6, 4, 11, 12, 10, 5
ASCLEPIADACEAE	
<i>Calotropis procera</i>	7, 4, 6
ASTERACEAE	
<i>Acanthospermum hispidum</i>	4
CAESALPINIACEAE	
<i>Parkinsonia aculeata</i>	4, 7
CUCURBITACEAE	
<i>Citrullus colocynthis</i>	6
<i>Citrullus lanatus</i>	6, 4
EUPHORBIACEAE	
<i>Euphorbia hirta</i>	4, 2, 7, 5
MALVACEAE	
<i>Malvastrum americanum</i>	4
<i>Sida acuta</i>	7
PASSIFLORACEAE	
<i>Passiflora foetida</i>	2, 4, 7, 6
SOLANACEAE	
<i>Datura innoxia</i>	4