D U C K C R E E K

STUDY OF VEGETATION AND FLORA AS RELATED TO LANDFORM.

K.R.NEWBEY & B.J.NEWBEY.

APRIL 1990.

CONTENTS :

ACKNOWLEDGEMENT

Malcolm Trudgeon assisted by identifying some plant fragments and checking the floristic list. (He did not see any of the herbarium specimens.)

INTRODUCTION

Field work for the study was done by Ken Newbey (KRN) in August 1984. Data was recorded from seventeen sites. A site location map is provided, with a key to alternative site numbers used in the report. Landforms are described briefly; sixteen vegetation sites are described in detail. A flora list which includes frequency and abundance estimates, completes the report.

Prior to his death KRN had written up most of the landform data and much of the flora list. Working from the data sheets, B.Newbey, who had accompanied KRN in the field, completed those sections and compiled the site descriptions. The landform diagrams are from sketches by KRN. B.Newbey took the photos.

The Pilbara flora is not well known. As a consequence some of the names are uncertain.

SITE LOCATIONS:

The photocopy is part of "WYLOO" a Joint Operations Graphic.
Scale 1:250 000; Series 1501; Sheet SF 50.10; Edition 1.

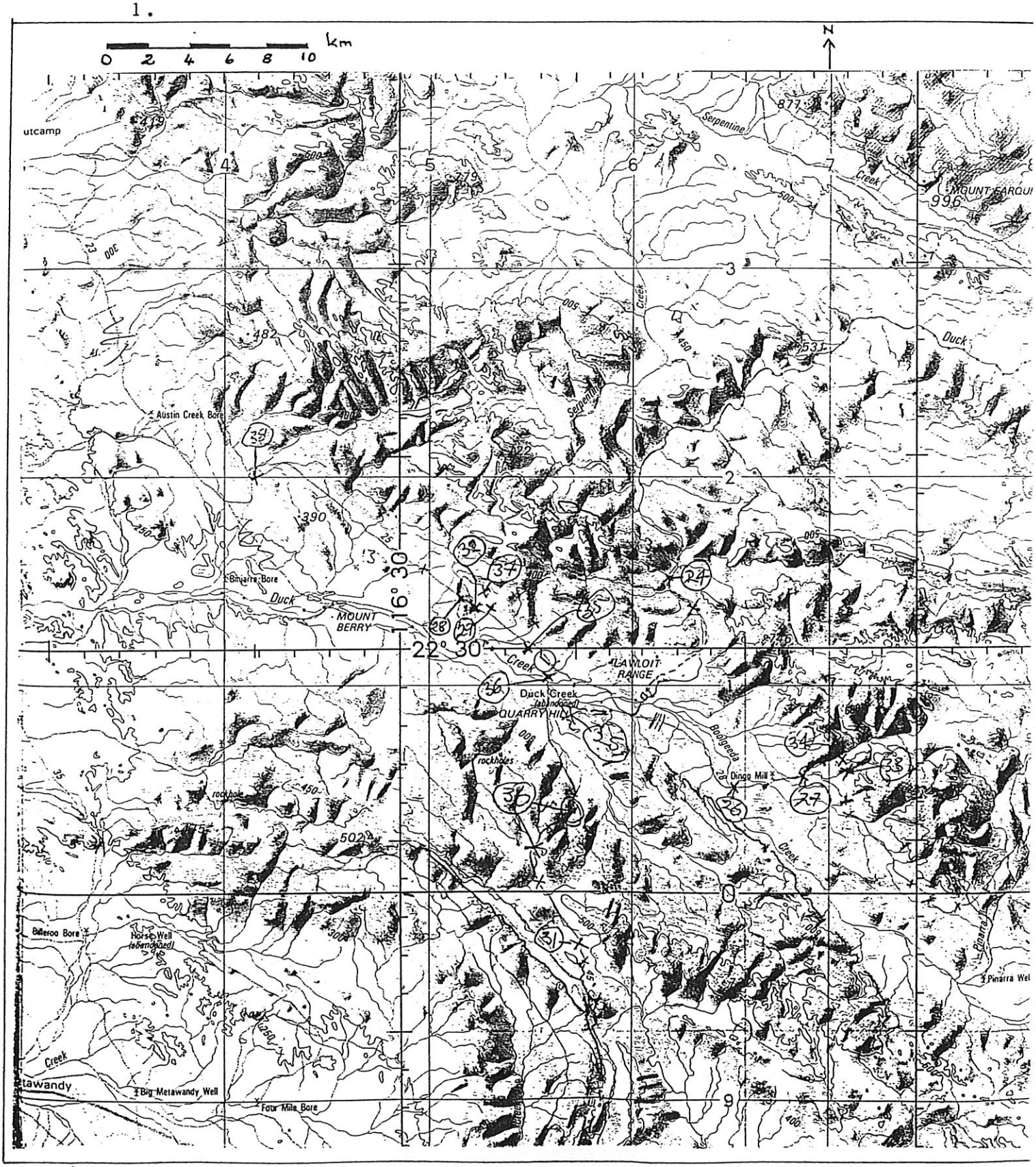


FIG. 1

SITE NUMBERING:

On the location map sites have their original numbers, elsewhere a number system according to landform is used.

EQUIVALENTS

ORIGINAL NUMBER.	LANDFORM NUMBER.	ABBREVIATION.
24	River 1.	(R1)
25a	Robe 2.	(T2)
25b	Robe 3.	(T3)
26	River 2.	(R2)
27	Robe 1.	(T1)
28	Boolgeeda 2.	(B2)
29	Capricorn 2.	(C2)
30	Newman 1.	(N1)
31	Newman 5.	(N5)
32	Boolgeeda 1.	(B1)
33	Newman 2.	(N2)
34	Newman 3.	(N3)
35	Boolgeeda 3.	(B3)
36	River 3.	(R3)
37	Newman 4.	(N4)
38	Capricorn 1.	(C1)
.	Newman 6.	(N6)

LANDFORMS

Payne et al (1982) have described the landforms of the Ashburton River catchment, which includes the Study Area, by land systems. Each land system is divided into one or more units. Six land systems occur within the Study Area.

The Study Area consists of three relatively distinct levels. Highest in the landscape are the plateau of Brockman Ironstone Formation (BIF) or basalt. Lowest in the landscape are the creeks (Duck & Boolgeeda) with narrow colluvial flats. Intermediate are the remnants of Robe deposits in valleys that remain as mesas and undulating plain. In some places, resistant ridges of quartzite and dolomite protrude from the valley floor.

Plateaux were the dominant landform with an altitude range of 300-400m. Occasionally higher areas reached 700m. The Newman Land System had developed over both BIF and basalt. Some areas of basalt were less resistent to weathering and formed valleys within the plateau (Rocklea Land System). The Robe Land System has developed over Robe pisolite. The Boolgeeda Land System consists of colluvial valley bottoms where Robe pisolite was never deposited, or has been completely removed by erosion. Quartzite ridges and dolomite exposures are the only elements of Capricorn Land System noted. The creeks, and their associated floodplains constitute the River Land System.

One land system (Rocklea) was neither traversed or sampled. Not all of the units of the other five land systems were sighted within the Study Area.

Described below are the units as they were observed within the Study Area.

BOOLGEEDA Land System (4 units)

Occurs on the valley bottom between the higher Newman Land System, and grading downslope into River Land System. Most of the run-off moving over the Boolgeeda Land System originates on the extensive plateau of the Newman Land System. Landform development is only slightly controlled in a few places by small residuals of harder quartzite or dolomite.

Unit 1 (Low hills and rises): Absent or too small to sample (rises 15-20 m across).

Unit 2 (Stony upper plains): Absent.

Unit 3 (Lower plains): 0.5-1.0 km wide, general slope of 1-2 degrees, slightly concave, planar to gentle undulated, overall relief of 5-20 m, covered with a mantle of colluvium derived mainly from the upland. Local slopes rarely exceed 2 degrees, and their internal relief < 5 m. drainage pattern mainly dendritic having originated on the plateau.
Sites: Boolgeeda 2,3.

Unit 4 (Narrow drainage floors and channels): Drainage lines (20-40 m wide) traverse the plains. They are incised to 1 m, parallel banks, width variability moderate, curved, sinuosity low, 1-3 channels. Channels are 2-8 m wide and braided. Floodplains rarely exceed a few metres in width. Permanent pools not seen. Flows appear to be strong but of short duration following the heavier falls of rain. Casual observations suggest that alluvial deposits may only be 60-100 cm thick. Lateral drainage into these

well-defined drainage lines are only faint without channel formation.
Site: Boolgeeda 1.

CAPRICORN Land System (5 units)

Areas of the land system occurs as either (a) large linear sections about 1 km wide and 2-4 km long, or (b) small exposures within Boolgeeda Land System.

Unit 1 (Sandstone, greywacke, minor schist ridges and hills): Steep ridges 60-70 m above colluvial flats of Boolgeeda Land System. Morphology is controlled by quartzite dipping SW at 40-45 degrees with strong bedding planes. The upper 20-30 m of the crest on the SW slope of the less-steep ridges consists of bare rock with soil restricted to cracks. The middle and lower slope are slightly concave. Sketelal stony soils have accumulated. The steepest ridges were bare rock apart from the lower 20-15 m. The NE slope of 50-60 degrees overlies dolomite, apart from the upper 10-12 m (quartzite). Quartzite is more resistent to weathering than dolomite and controls the degree of slope. Drainage was restricted to faint and vertical drainage lines on some middle and lower slopes.
Stability of regolith is low due to their steep slopes with high colluvial action during heavy rains - either by sheet erosion or possibly soil slip.
Site: Capricorn 1.

Unit 2 (Dolomite hills): Sampling was restricted to two small exposures on the valley bottom of Boolgeeda Land System. The exposures consisted of well-bedded dolomite dipping at 80-85 degrees to SW. The general slope of the NE face was 30-35 degrees. The exposures were 5-10 m high and ca 80 m x 45 m. Soil was restricted to cracks and basal colluvium. The dolomite

have weathered into micro-karst morphology and cracking associated bedding controlled the morphology of the exposures. The exposures were too small to have developed drainage lines. Most of the soil formed on the upper three quarters of the exposure was washed down onto the basal colluvial slope.

Site: Capricorn 2.

Unit 3 (Low slopes and stony interfluves): Absent.

Unit 4 (Alluvial fans): Absent.

Unit 5 (Narrow drainage floors and channels): Absent.

NEWMAN Land System (5 units)

Morphology of the extensive plateau are controlled by bedding of BIF and fracturing of basalt. In zones of weakness, creeks have cut flat-bottomed valleys. Lateral drainage is incised and has resulted in sharp V-shaped drainage lines, or steep sided gorges.

This system has been divided into 5 units on a slightly different basis to that of Payne et al (1982). The morphology within the Study Area did not fit comfortably within their classification. Their units 1 and 2 have been combined into unit 1 below. My units 2, 3 and 4 are additional while their unit 3 now becomes my unit 5.

Unit 1 (Incised plateau and marginal slopes): Much of the plateau has been incised by V-shaped drainage lines resulting in slightly concave slopes of 5-25 degrees. General relief is 30-60 m with a few resistent and

rounded areas 100-200 m above this general level. Bedrock exposures and skeletal stony soils are common. Drainage is dendritic and of moderate density. The surface is strongly erosional due to steep slopes and high run-off. A change in bedrock from BIF to basalt did not appear to affect the gross morphology of this unit.

Sites: Newman 1,3,4.

Unit 2 (Gentle undulating plateau): A few small areas (5-20 ha) on flatter sections of the plateau had developed gentle undulating surface with a deeper mantle of soil and few bedrock exposures. The reason for the underlying strata (BIF) has less influence than in unit 1 was not obvious. Overall slopes were ca 2 degrees and overall relief less than 20 m. Local slopes were generally less than 3 degrees and local relief less than 12 m. Density of drainage lines is similar to Unit 1. The soil had greater stability than Unit 1.

Site: Newman 5.

Unit 3 (Gorges): Their width ranges from 20-50 m downstream, and their depth from 20-70 m. The upper 0.3-0.5 of the gorge walls is close to perpendicular with local irregularities. Lower slopes are colluvial and 20-30 degrees. Angular tumble blocks, up to 6 m across, are present along or in the narrow drainage line. Some small caverns have eroded into the lower bedrock exposures - possibly due to weathering and erosion from water seeping thru the bedrock from the plateau surface. Base level of drainage lines is strongly related to those on ajoining colluvial flats (or vice versa). The single channel is 3-5 m wide with a floor of rounded BIF. During floods, up to 5 m of water flows down the gorge. Vertical walls and channel floors appear stable but the colluvial lower slopes

appear unstable due to sheet erosion and soil creep.

Site: Newman 2.

Unit 4 (Spring): A permanent spring was located in basalt. The spring was at the base of a waterfall, ca 35 m high, that only flowed following heavy rains. However, water appeared to seep all the year out of vertical cracks in the columnar basalt. The pool at waterfall base was ca 10 m across and ca 70 cm deep when full. Also, the spring was being almost always in the shade as it faced SW. Seepage and shade made this habitat most unusual.
Site: Newman 6. Flora recorded in the floristic list, but the data sheet was missing. So there is no site data.

Unit 5 (Narrow drainage floors with channels): The nearest to this unit was a major drainage line sampled on the dissected plateau over basalt. None were seen on BIF. The sinuous drainage floor was 25-40 m wide, mainly with a single channel 50-70 cm deep and up to 2 m wide. Sometimes the channel divided into 2 for up to 100 m. Flows were only for short periods following heavy falls of rain and appeared not to exceed 1 m in depth.

RIVER Land System (4 units)

The main creeks of the Study Area are either deeply incised into the Newman Land System, or traverse the valley bottoms of the Boolgeeda Land System. Width varies from 100 m to 300 m. Following very heavy falls of rain, the flows are up to 5 m deep, strong and may last for 1-5 days.

Unit 1 (Flood plains): They are 1-2 m above channel level, up to 250 m wide and almost continuous on the Boolgeeda Land System. Within the Newman Land System their width varies from a few metres to 150 m. Their internal

relief is usually less than 1 m but undulate from strong flows between the trees when in flood. Denser vegetation of tall shrubs slows the floods more than trees resulting in finer sediments being deposited formed a more subdued soil surface. Dense stands of both perennial and annual grasses follow floods. They are well-suited to trapping sediments.
Sites: River 2,3.

Unit 2 (Sandy margins): Absent.

Unit 3 (Stony plains): Absent.

Unit 4 (Channels and banks): Channels are 1.0-1.3 m deep and 30-150 m wide, parallel, high width variability, curved, low to moderate sinuosity, with 1-3 channels. Channel floors consist of coarse material, mainly from 1-250 mm across. Pools are common with a few being permanent. They are sinuous, 10-20 m wide, up to 200 m long and up to 1 m deep. The coarse alluvium also forms resivours with some throughflow for several weeks after floods. Within and between the channels are sinuous banks up to 1.5 m high and up to 150 m long. They are associated with lines of trees, or dense shrubs which can tolerate the force of floods.
Site: River 1.

ROBE Land System (3 units)

The system consists of remnants of previous colluvial valley fill of material from the higher Newman Land System, follower by laterization. The system is linear and usually divided in two by the lower River or Boolgeeda Land Systems. Each section is 100-600 m wide. Plateau and mesa surfaces are 70-80 m above the major creek channels. Morphology is

controlled by the laterized duricrust which weathers more slowly than the underlying ferrugenous material.

Unit 1 (Low plateaaux, mesas and buttes): They are formed of duricrust now 3-5 m thick. Summits of plateaux and mesas are almost planar with slopes <1 degree and internal relief of less than 5 m. Exposures of the duricrust are common. The remained is covered with skeletal to shallow, in situ weathered gravelly sand. Faint drainage lines are present on surfaces more than 2 ha. in size. They are acentric, with small flows for short periods after floods. Some contain shallow alluvium in some places. Most of the surfaces are moderately stable due to their flatness. Margins are more prone to water erosion. Most plateaux and mesas are defined by a free face 3-5 high and tending vertical. The face usually contains caverns up to 2 m high and 6 m deep, at the interface between duricrust and underlying ferrugenous material. Micro-caverns may be present in the duricrust. They have been formed mainly from solution channels.
Site: Robe 2.

Unit 2 (Lower slopes): Apart from near the base, they tend to be flat with slopes of 25-35 degrees, 100-150 (-200 m) long, and their morphology is strongly controlled by the upslope duricrust. Covering the slopes is a shallow to skeletal mantle of stony soil of both colluvial and in situ weathering origin. Tumble blocks of duricrust, 80-200 cm across frequently cover 1-5% of the lower slope. The surface is barely stable and, during and after heavy rains, subject to some sheet erosion and soil creep.
Site: Robe 3.

Unit 3 (Drainage floors and channels): Valley floors were linear and up

to 500 m wide. The general slope was usually less than 2 degrees with internal relief rarely exceeding 5 m. Most sections consisted of colluvium and their morphology was more subdued than where the section consisted of mesa stumps or laterized colluvium. These sections had a more rounded landform with slopes up to 10 degrees and internal relief of up to 10 m. Drainage was dendritic but strongly influenced by any mesa stumps. Surface stability decreased as the degree of slope increased. Mesa stumps consisted largely of bedrock exposure with some areas of skeletal soils. Colluvial soils were shallow to deep.

Site: Robe 1.

SITE DESCRIPTIONS

Listed below are descriptions of typical vegetation sites including data on landform and soil. Vegetation types are separated by structure and life form after Muir, (1977), as is the structure notation. The height range of each stratum is given as well as the dominant plant species at that height.
"Misc. plants" means miscellaneous plants and includes annuals, climbers, ferns perennial grasses, sedges and sedgelike plants. Figures in brackets following plant names are the estimated per cent canopy cover; "(+)" indicates less than one per cent canopy cover. KRN numbers are Ken Newbey collecting numbers. A "P" number is a field herbarium number, of value only to indicate an additional taxon differentiated at the time. Some specimens were lost to mould, hence there were a few gaps in the collection.

"Bedrock" refers to the major rock type, "unit" to a landform unit, "element" to a component of that unit. The per cent cover of rock, stone and pavement was visually estimated. For litter, see Muir, (1977).
To sample the soil profile, a hole 62mm in diameter was augered to a depth of one metre where possible.

cc = Canopy cover
N/R = Not recorded.

BOOLGEEDA 1

REGION: PILBARA AREA: DUCK CREEK DATE: 8-8-1984.

LOCATION: 6.2km NW abandoned homestead. Lat. 22° 28'56" S, Long. 116° 31'38" E.
SIZE: 1 ha.
VEGETATION TYPE: Acacia citrinoviridis Tall Scrub. MUIR: Si.SAr.GLi

STRATUM 1 Shrubs 2-5m cc=28%
Acacia citrinoviridis (25), A. pyrifolia (1), Porana sericea (2).
STRATUM 2 Shrubs 1.4-2.0m cc=3%
Abution muticum (2), Grevillea ?stenobotrya (5), Indigofera monophylla (1), Solanum sturtianum (+).
STRATUM 3 Misc. plants 0.1-1.0m cc=30
Acacia coriaceae (+), Amaranthus pallidiflorus (0.5), Argemone mexicana (2), Boerhavia repleta (+), Calocephalus sp. KRN 10575 (1), Cenchus ciliaris (5), Bulbostylis barbata (+), Cleome viscosa (+), Convolvulus erubescens (+), Corchorus walcottii (2), Cymbopogon bombycinus (+), Dysphania rhaphinostachum (3), Eriachne sp. KRN 10627, Enchlaeana tomentosa (+), Euphorbia australis (2), E. coghanii (+), Helipterum margarethae (+), Hybanthus enneaspermus (+), Lepidium oxytrichum (2), Mukia maderaspantana (+), Nicotiana obliqua (+), Polycarpaea longiflora (+), Rhynchosia minima (+), Solanum cleistogamum (+), S. lasiophyllum (+), Tephrosia rosea (2), Triodia basedowii (10), Trachymene glaucifolia (+), T. olearaceae (+), Trichodesma zeylandicum (+).

No. of TAXA: 38 LAST BURNT: ca. 50 years
MODIFICATION: Moderate grazing by cattle.

LANDFORM
BEDROCK: Duck Creek syncline complex.
UNIT: Colluvial flat ELEMENT: Drainage line

SOIL
ORIGIN: Alluvial DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: Holds water longer than flat.
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: Nil
STONE: 10-35% cover, patchy distribution, subangular, 2-16cm.
PAVEMENT: 0-90% cover, patchy distribution, main size range 5-16mm.
LITTER: 15% cover, mostly broad leaves and a few branches.
PROFILE: A 0-100cm. Friable to loose, 30-60% stone. Boundary unknown.

BOOLGEEDA 1

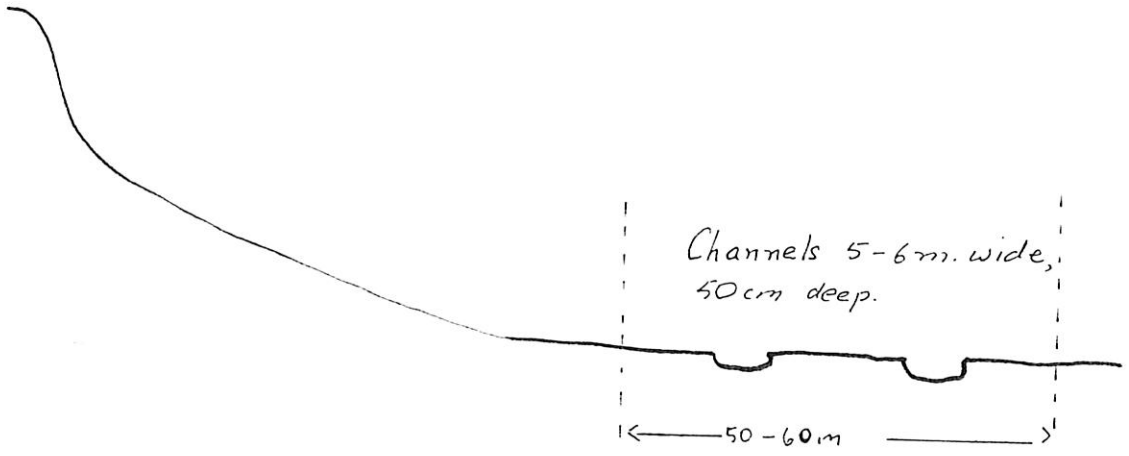
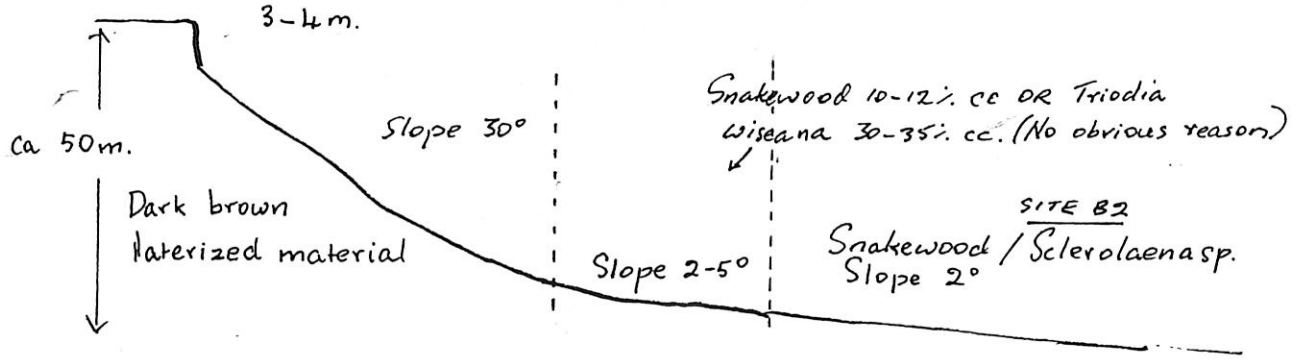


FIG. 2

BOOLGEEDA 2



BOOLGEEDA 3

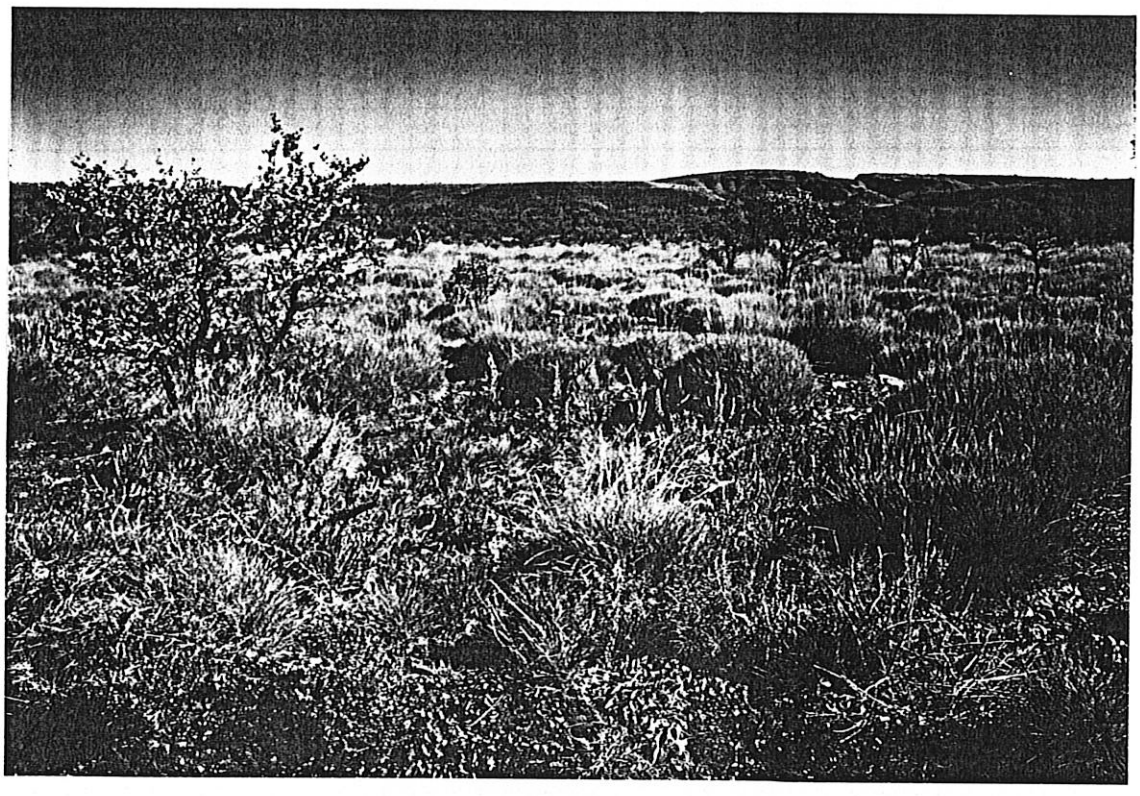


FIG. 3

BOOLGEEDA 2

REGION: PILBARA AREA: DUCK CREEK DATE: 6-8-1984

LOCATION: 8km NW Quarry Hill. Lat. 22°28'44" S, Long. 116°31'47" E.
SIZE: 0.6 ha.
VEGETATION TYPE: Acacia xiphophylla (Snakewood) scrub.
MUIR: Si.SBr.SDi.

STRATUM 1 Shrubs 2.2-3.0m cc=15
Acacia xiphophylla (15), A. victoriaea (+).
STRATUM 2 Shrubs 1.4m cc=1
Cassia leurssenii (1).
STRATUM 3 Misc. plants 0.1-0.9m cc=17
Brachyachne prostrata (2), Cassia helmsii (+), Cymbopogon bombycinus (+), Enchleana tomentosa (+), Eremophila cuneifolia (+), Euphorbia australis (+), Gnephosis sp. KRN 10780 (+), Heliotropium heteranthii (+), Maireana tomentosa (+), Ptilotus exultatus (+), P. obovatus (+), Salsla kali (+), Sclerolaena eriacantha (15), Sida echinocarpa (+), Solanum cleistogamum (+), Triodia pungens (+).

No. of TAXA: 19 LAST BURNT: unknown
MODIFICATION: N/R

LANDFORM
BEDROCK: Robe pisolite
UNIT: Colluvial flat ELEMENT: Narrow drainage line, no channel (in part).
SOIL
ORIGIN: Colluvial DEPTH: Unknown
PRIMARY FORM: N/R DRAINAGE: Normal
PROFILE ATTRIBUTES: N/R SURFACE: Hardsetting
ROCK: nil STONE: 0-5% Patchy, subangular, 2-8cm.
PAVEMENT: 90-99% cover, even distrib., 5-16mm pisolitic material.
LITTER: 2%, a few branches and broad leaves.
PROFILE: A 0-15+ Friable, 20-30% inclusions flat or irregular, 1-4cm long. Too dry and stony to auger deeper.

BOOLGEEDA 3.

REGION: PILBARA AREA: DUCK CREEK DATE:8-8-84

LOCATION: 4km NW Quarry Hill. Lat. 22°30' 0" S, Long. 116°33' 40" E
SIZE: 0.6 ha.
VEGETATION TYPE: Acacia inaquelatera Open scrub
MUIR: Sr.SDr.Hi

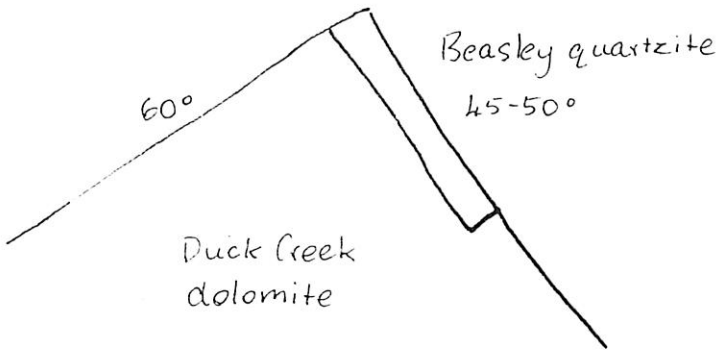
STRATUM 1 Shrubs 2.2-2.7m cc=1.7
Acacia inaequilatera (1), A. citrinoviridis (+), A. victoriae (+).
STRATUM 2 Shrubs 1.3-2.0m cc=0.5
Acacia ancistrocarpa (+), A. Bivenosa (+), A. Xiphophylla (0.5), Cassia glutinosa (+), C. pruinosa (+).
STRATUM 3 Misc. plants 0.1-0.9m cc=31
Amaranthus pallidiflorus (1), Boerhavia gardneri (+), Bulbostylis barbata (+), Calandrinia sp. KRN 10754 (+), Calocephalus sp. KRN 10575 (+), Calotis hispidula (+), C. multicaulis (+), Cenchus ciliaris (+), Corchorus walcottii (+), Dysphania rhadinophylla (2), Euphorbia australis (+), Eremophila cuneifolia (+), Eragrostis dielsii (+), Flaveria australasica (+), Heliotropium cunninghamii (+), Indigofera colutea (4), Maireana georgei (+), Mukia maderaspantana (+), Nicotiana occidentalis (+), Phyllanthus lacunellus (+), Polycarpaea longiflora (+), Pomaderris muelleri (+), Ptilotus Atilliflorus (+), P. clementii (+), P. exultatus (+), P. obovatus (+), Pterocaulon sphaeranthoides (+), Salsola kali (+), Sclerolaena muricata var. villosa (1),Sida echinocarpa (+), Solanum cleistogamum (+), S. lasiophyllum(+), Swainsona maccullochiana (+), Trachymene glaucifolia (+), Trichodesma zeylanicum (+), Triodia basedowii (20), Zaleya gaberculata (+).

No. of TAXA:46 LAST BURNT: unknown
MODIFICATION: N/R

LANDFORM
BEDROCK: Unknown,Duck Creek SYNCLINE.
UNIT: Colluvial plain ELEMENT: N/R

SOIL
ORIGIN: Colluvial DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: Normal
PROFILE ATTRIBUTES: SURFACE:
ROCK: nil STONE: 5%, patchy, subangular, 2-5 cm
PAVEMENT: 90%, even, 8-20mm, flat to subangular BIF, subrounded basalt.
LITTER: nil
PROFILE: A 0-22+ Friable, 20-40% angular BIF and subrounded basalt 1-5cm long. Too dry to auger deeper.

CAPRICORN 1



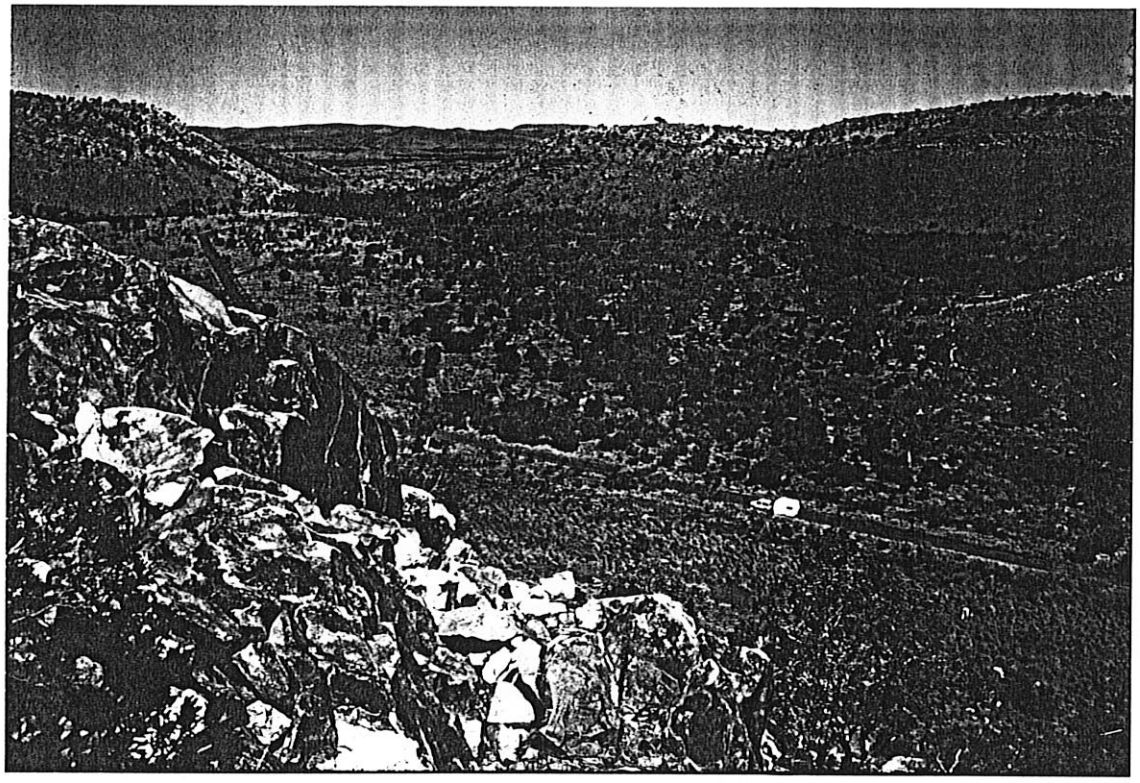


FIG. 4

CAPRICORN 1.

REGION: PILBARA AREA: DUCK CREEK DATE: 9-8-84

LOCATION: 19km NW Quarry Hill. Lat. 22° 25' 32" S, Long. 116° 25' 53"
SIZE: 1 ha.
VEGETATION TYPE: Eucalyptus leucophloia Open low woodland
MUIR: LAr. Sr.Hi

STRATUM 1 Trees 5-6m cc=4
Eucalyptus leucophloia (3), E. sp. (1),
STRATUM 2 Shrubs 2-4m cc=3.6
Acacia Xiphophylla (1), A. inaequilatera (+), Eremophila latrobei ssp. latrobei (2), Porana sericea (+).
STRATUM 3 Shrubs 1.1-1.3m cc=1.1
Cassia glutinosa (1), Jasminum lineare (+).
STRATUM 4 Misc. plants cc=34
Abutilon marum (+), Amaranthus pallidiflorus (+), Calotis hispidula (+), Cassia oligophylla (+), Cheilanthes lasiophylla (+), C. sp. KRN 10798, Cymbopogon bombycinus (+), Dysphania rhadinophylla (+), Eriachne dominii (+), Gomphrena cunninghamii (+), Helipterum margarethae (1), Hibiscus aff. coatesii (+), Maireana georgei (+), Minuria sp.KRN 10791 (+), Momordica balsmina (+), Mukia maderaspantana (+), Nicotiana sp. KRN 10700 (+), Ptilotus clementii (+), P. obovatus var. obovatus (+), Solanum cleistogamum (+), S. lasiophyllum (+), Trichodesma zeylanium (+), Triodia basedowii (25), T. pungens (5).

No. of TAXA: 39 LAST BURNT: unknown
MODIFICATION: N/R

LANDFORM
BEDROCK: Beasly Quartzite
UNIT: High ridge ELEMENT: Slope

SOIL
ORIGIN: Alluvial DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: Dry
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: 30-70%, upper 40%, even
STONE: 30-50%, even, angular 5-40cm, quartzite (upper)
PAVEMENT: N/R
LITTER: nil
PROFILE: A 0-10+ Friable 50-70% subrounded quartzite 1-8cm long. Boundary not seen but believed to be sharp, irregular, with no obvious weathering zone, and at a depth of approximately 20cm.

CAPRICORN 2.

REGION: PILBARA AREA: DUCK CREEK DATE: 6-8-84

LOCATION: 6 km NW Quarry Hill. Lat. 22°28' 56" S, Long. 116°32' 40" E
SIZE: 0.2 ha.
VEGETATION TYPE: Scrub (Mixed shrubs) MUIR: Si.SCr.Hi

STRATUM 1 Shrubs 2.0-4.0m cc=11
Acacia xiphophylla (+), A. inaequilatera (1), Brachychiton australe (+), Clerodendron lanceolatum (+), Eremophila longifolia (+), Ficus platypoda (5), Gossypium robinsonii (3), Jasminum lineare (+), Stylobasium spathulatum (1), Tinospora smilacina (+).
STRATUM 2 Shrubs 1.3-1.6m cc=0.3
Acacia bivenosa (+), A. farnesiana (+), Cassia glutinosa (+), C. pruinosa (+), Hakea suberosa (+), Tephrosia uniovulata (+).
STRATUM 3 Misc. plants 0.1-0.9m cc=23
Amaranthus pallidiflorus (+), Aristida exserta (+), Boerhavia gardneri (+), Calotis hispidula (+), Caparris spinosa (+), Cassia oligophylla (3), Cleome viscosa (+), Corchorus walcottii (2), Cymbopogon bombycinus (+), Daucus glochiatus (+), Dysphania rhadinostachya (+), Enneapogon cearulescens (+), Eriachne mucronata (+), Eriachne sp. KRN 10627 (+), Euphorbia australis (+), Lepidium oxytrichum (+), Leptopus decaisnei (+), Mukia maderaspantana (+), Nicotiana occidentalis (+), N. sp. KRN 10700 (+), Oldenlandia crouchiana (+), Parietaria debilis (1), Ptilotus obovatus (+), Sida echinocarpa (+), Solanum lasiophyllum (+), Trichodesma zeylanium (+), Triodia basedowii (15).

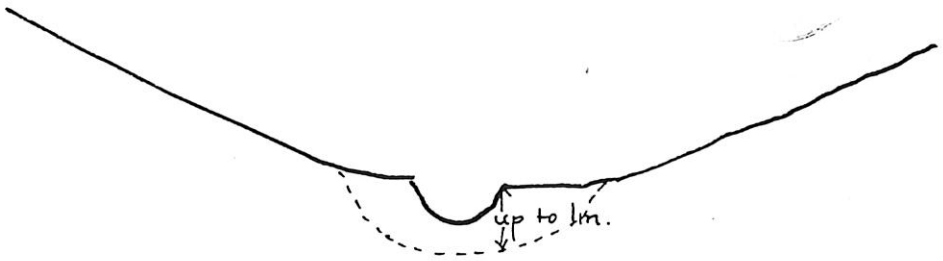
No. of TAXA: 43 LAST BURNT: ca 25 years
MODIFICATION: Grazing. No evidence of damage.

LANDFORM
BEDROCK: Duck Creek Dolomite
UNIT: Small hill ELEMENT: Entirity

SOIL
ORIGIN: Colluvial DEPTH: Skeletal
PRIMARY FORM: Uniform DRAINAGE: Dry
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: 20-30%, Patchy STONE: 40-80%, even, flat, 6-15cm.
PAVEMENT: 15-30%, patchy, 8-20mm.
LITTER: nil
PROFILE: A 0-7cm Friable, 20-40%inclusions of flat dolomite 1-3cm, boundary sharp, irregular, no obvious weathering zone.

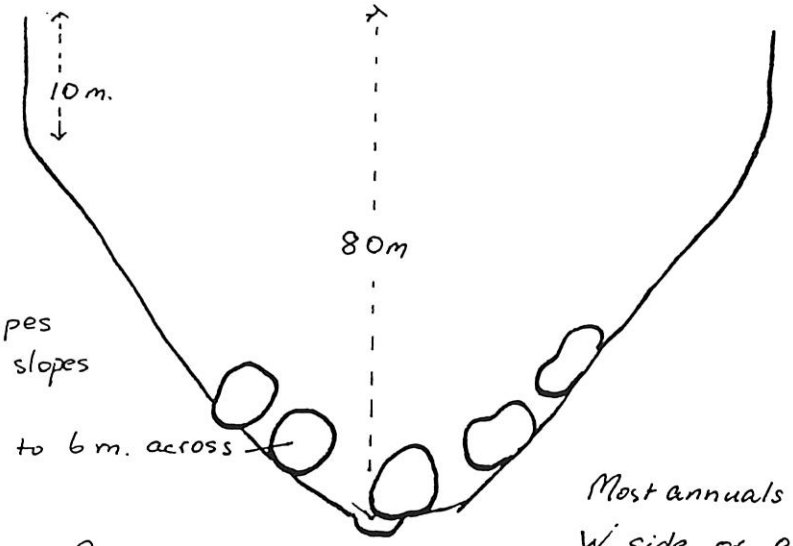
no page 23

NEWMAN 1



Channel 4-6m. wide
50-70cm deep

NEWMAN 2



Triodia on slopes
Shrubs lower slopes

Boulders up to 6m. across

Most annuals in shade - W side, or overhanging rock

Channel 3-5m. wide. River gums along channel or close by.

FIG. 5

NEWMAN 1.

REGION: PILBARA AREA: DUCK CREEK DATE: 7-8-84

LOCATION: 7 km SSW Quarry Hill. Lat. 22°35' 14" S, Long. 116°33' 45" E
SIZE: 0.3 ha.
VEGETATION TYPE: Eucalyptus leucophloia Low woodland
MUIR: LAi.Si.SAr.Hi

STRATUM 1 Trees 6m cc=12
Eucalyptus leucophloia (12).
STRATUM 2 Shrubs 2.1-4m cc=13
Acacia citrinoviridis (10), A. bivenosa (1), A. victoriae (+), Gossypium robinsonii (1), Jasminum lineare (+), Pentalostylis labicheoides (+).
STRATUM 3 Shrubs 1.0-1.9m cc=8
Acacia arida (3), A. pyrifolia (+), Cassia glutinosa (+), C. leurssenii (1), C. oligophylla (+), Hibiscus sp. KRN 10390 (1), Stylobasium spathulatum (2), Tephrosia uniovulata (+).
STRATUM 4 Misc. plants 0.1-0.9m cc=32
Acacia monticola (+), A. tetragonaphylla (+), Amyema preissii (+), Aristida obscura(+), Cassia helmsii (+), Cymbopogon bombycinus (+), Indigofera monophylla (1), Mollugo molluninus (+), Pluchea rubelliflora (+), Polycarpaea longiflora (+), Sida aff. virgata KRN 10692 (+), Trichodesma zeylanicum (+), Triodia basedowii (30).

No. of TAXA: 28 LAST BURNT: ca 40 years
MODIFICATION: None

LANDFORM
BEDROCK: Basalt
UNIT: Undulating upland ELEMENT: Creek line

SOIL
ORIGIN: Aeolian DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: Normal, retains water longer
PROFILE ATTRIBUTES: Stony SURFACE: Loose
ROCK: 5%, patchy STONE: 80%, patchy, 5-20cm long, subrounded
PAVEMENT: 30%, Patchy, 10-20mm.
LITTER: 2% cover, a few branches.
PROFILE: A 0-37cm Friable lenses of sorted and unsorted natural inclusions, 25-50% cover, 2-8cm long, subangular to subrounded. Boundary sharp, irregular, no obvious weathering zone.

NEWMAN 2.

REGION: PILBARA AREA: DUCK CREEK DATE: 8-8-84

LOCATION: 16.5 km E Quarry Hill. Lat. 22°33' 12" S, Long. 116°43' 4" E
SIZE: 1.5 ha.
VEGETATION TYPE: Eucalyptus camaldulensis Open low woodland
MUIR: LAr.Si.Hi

STRATUM 1 Trees 6m cc=5
Eucalyptus camaldulensis (5).
STRATUM 2 Trees and shrubs 2-6m cc=25
Acacia aneura (+), A. citrinoviridis (8), A. pruinocarpa (+), A. pyrifolia (+), A. xiphophylla (5), Brachychiton australe (+), Canthium latifolium (+), Cassia glutinosa (2), Clerodendrum lanceolatum (+), Dodonaea pachyneura (+), Eremophila latrobei ssp. glabra (2), Eucalyptus leucophloia (+), Ficus platypoda (+), Gossypium robinsonii (1), Melaleuca glomerata (+), Phyllanthus ciccoides (3), Porana sericea (+).
STRATUM 3 Misc. plants 1-1.8m cc=3
Abutilon muticum (+), A. arida (+), Astrotricha hamptonii (+), Capparis spinosa (+), Indigofera monophylla (+), Jasminum lineare (1), Mukia maderaspantana (+).
STRATUM 4 Misc. plants 0.1-0.9m cc=41
Amaranthus pallidiflorus (+), Amyema preissii (+), Aristida obscura (+), Cleome viscosa (1), Corchorus walcottii (3), Cymbopogon bombycinus (+), ? Cynanchium (+), Cyperus cunninghamii (1), C. vaginatus (+), Dysphania rhadinostachya (2), Eriachne sp. KRN 10627 (5), Euphorbia australis (+), E. coghanii(+), Euphorbia sp. KRN 10597 (+), Gomphrena cunninghamii (1), Helipterum margarethae (2), Leoidum oxytrichum (+), Leptopus decaisnei(+), Nicotiana sp. KRN 10700 (1), Paspalidium clementii (+), Pluchea rubelliflorus (1), Polycarpaea longifolia (2), Ptilotus obovatus (1), Rhychosia minima (+), Sida aff. virgata (+), Sigesbeckia orientalis (+), Solanum lasiophyllum (+), Sonchus oleraceus (+),Sporobolus australasicus (2), Triodia basedowii (15), Themeda australis (+), Trachymene glaucifolia (+), T. oleracea (+), Tribulus platypterus (+), Unknown sp. KRN 10810 (+)..
No. of TAXA: 63 LAST BURNT: unknown
MODIFICATION: N/R

LANDFORM
BEDROCK: N/R
UNIT: N/R ELEMENT: N/R

SOIL
No soil sample taken.

NEWMAN 3.

REGION: PILBARA AREA: DUCK CREEK DATE: 8-8-84

LOCATION: 16 km E Quarry Hill. Lat. 22°32' 52" S, Long 116°42' 54" E
SIZE: 1 ha.
VEGETATION TYPE: Eucalyptus leucophloia Open low woodland
MUIR: LAr.SAr.Hi

STRATUM 1 Trees 5-7m cc=3
Eucalyptus leucophloia (3).
STRATUM 2 Shrubs 2.6m cc=0.2
Acacia maitlandii (+), A. pyrifolia (+).
STRATUM 3 Shrubs 1.0-1.8m cc=4
Acacia arida (2), A. xiphophylla (1), Cassia glutinosa (+), Eremophila latrobei ssp. glabra (+), Indigophera monophylla (+).
STRATUM 4 Misc. plants 0.1-0.7m cc=36
Bulbostylis barbata (+), Cassia oligophylla (+), Cheilanthes lasiophylla (+), Cleome viscosa (+), Corchorus walcottii (+), Crouchiana oldelandii (+), Cymbopogon bombycinus (+), Dysphania rhadinophylla (+), Eriachne sp. KRN 10627 (15), Euphorbia australis (+), Gomphrena cunninghamii (+), Polycarpaea longiflora (+), Ptilotus obovatus (+), Solanum cleistogamum (+), S. lasiophyllum (+), Trachymene oleracea (+), Trichodesma zeylanicum (+), Triodia basedowii (20), T. pungens (1).

No. of TAXA: 28 LAST BURNT: ca 60 years
MODIFICATION: None

LANDFORM
BEDROCK: Brockman Ironstone Formation
UNIT: Upland ELEMENT: Slope (7-10)

SOIL
ORIGIN: In situ weatering DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: N/R
PROFILE ATTRIBUTES: N/R SURFACE: Hardsetting
ROCK: 5-10%, patchy. STONE: 60-90%, even, flat, 6-50cm.
PAVEMENT: 0-20%, patchy, 5-20mm.
LITTER: 2% cover, a few branches and trunks.
PROFILE: N/R

NEWMAN 4.

REGION: PILBARA AREA: DUCK CREEK DATE: 9-8-84

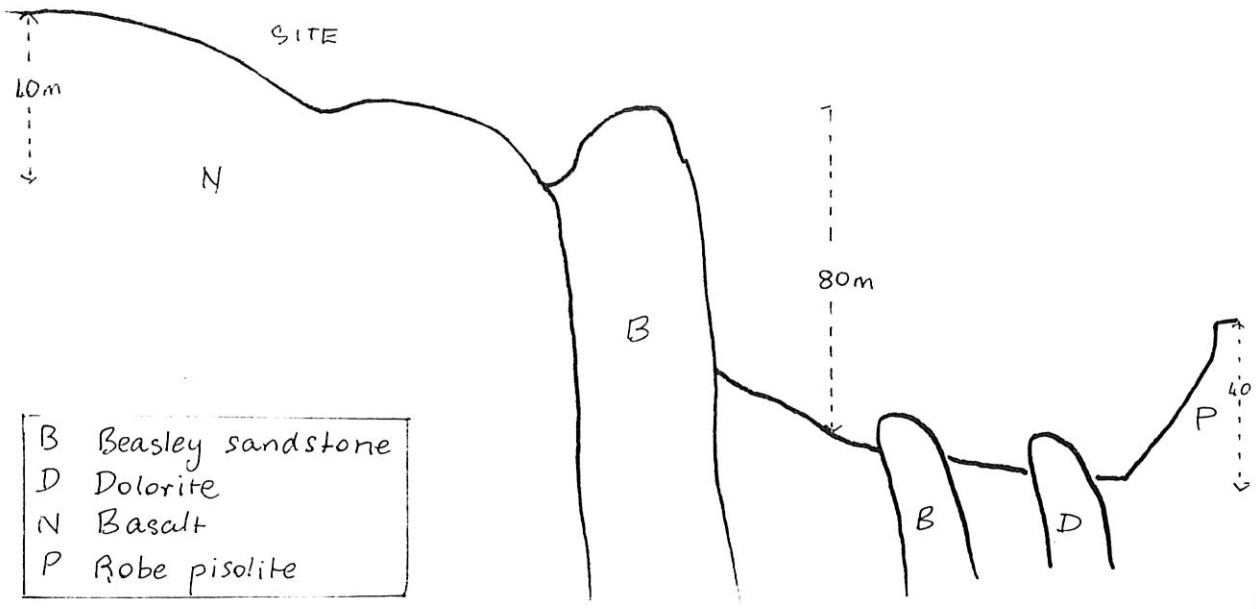
LOCATION: 7 km NW Quarry Hill. Lat. 22°28' 32" S, Long. 116°32' 25" E
SIZE: 1.5 ha.
VEGETATION TYPE: Eucalyptus leucophloia Open low woodland
MUIR: LAr.SAr.Hc

STRATUM 1 Trees 6m cc=2
Eucalyptus leucophloia (2).
STRATUM 2 Shrubs 2.1-4.0m cc=+
Acacia ancistrophylla (+), A. citrinoviridis (+), Gossypium robinsonii (+).
STRATUM 3 Shrubs 1-2m cc=3.5
Acacia arida (3), A. xiphiphylla (+), Cassia glutinosa (+), C. pruinosa (+), Eremophila latrobei ssp. glabra (+), Tephrosia uniovulata (+).
STRATUM 4 Misc. plants 0.1-0.8m cc=36
Angianthus calocephalus (+), Bulbostylis barbata (1), Calandrinia sp. KRN 10754 (+), Calotis hispidula (+), Dysphania rhadinostachya (2), Eremophila exilifolia (+), Eriachne dominii (+), Eriachne sp. KRN 10727 (+), Euphorbia drummondii (+), Gnephosis sp. KRN 10780 (1), Grevillea stenobotrya (+), Helipterum margarethae (+), Lepidium oxytrichum (+), Mollugo molluginis (+), Oldenlandia crouchiana (+), Paspalidium clementii (+), Phyllanthus lacunellus (+), Polycarpaea holtzei (+), P. longiflora (+), Polygala sp. (+), Ptilotus gaudichaudi (+), P. obovatus (+), Solanum lasiophyllum (+), Stackhousia intermedia (+), Trachymene oleracea (+), Tribulus platypterus (+), Triodia basedowii (30), Triumfetta micrantha (+).

No. of TAXA: 40 LAST BURNT: ca 50 years
MODIFICATION: None
LANDFORM
BEDROCK: Basalt
UNIT: Undulating upland ELEMENT: Slope 4° and 25°

SOIL
ORIGIN: In situ weathering DEPTH: Shallow
PRIMARY FORM: Uniform DRAINAGE: Dry
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: 0-20%, Patchy. STONE: 5-90%, even, 2-12cm long, subangular.
PAVEMENT: 0-25%, patchy, 10-20mm long.
LITTER: None
PROFILE: A 0-12cm Friable to firm, 20-40% subangular to subrounded basalt 1-4cm. Boundary sharp, irregular, no obvious weathering zone.

NEWMAN 4



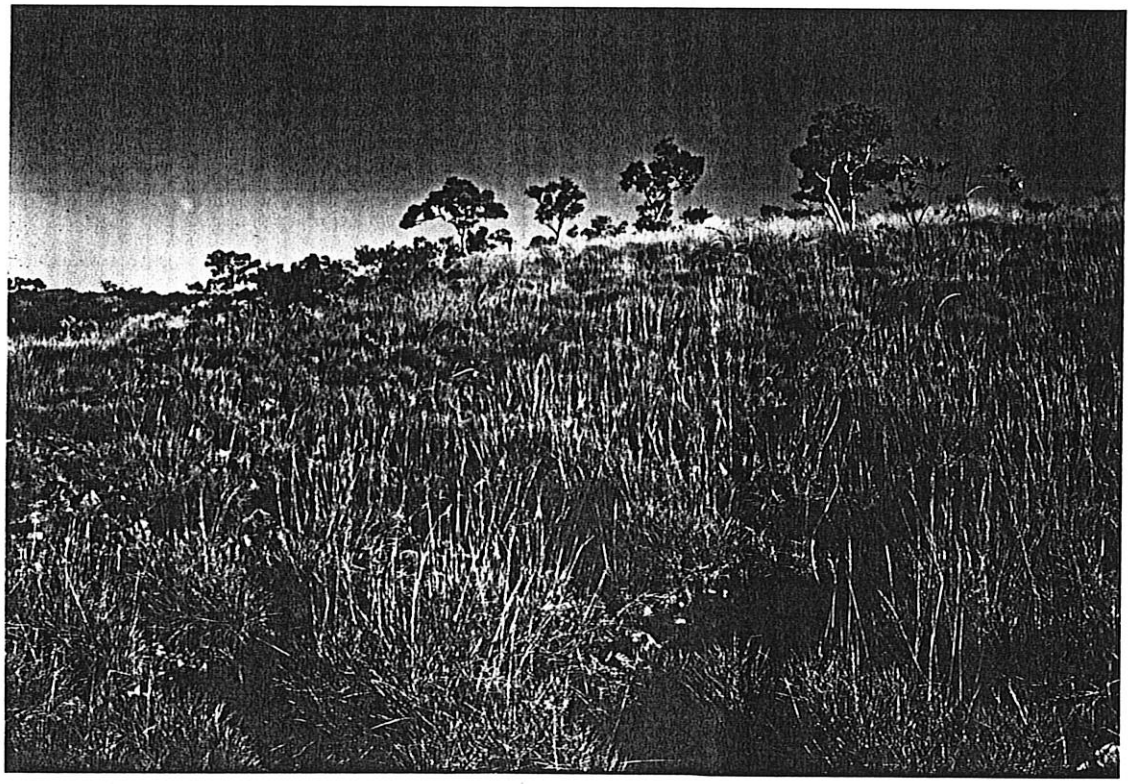


FIG. 6

NEWMAN 5.

REGION: PILBARA AREA: DUCK CREEK DATE: 7-8-84

LOCATION: 11 km S Quarry Hill. Lat. 22° 37' 40" S, Long. 116°35' 7" E
SIZE: 0.6 ha.
VEGETATION TYPE: Acacia bivenosa Open scrub MUIR: Sr.SAi.Hi

STRATUM 1 Trees 7m cc=+
Eucalyptus leucophloia (+).
STRATUM 2 Shrubs 2.1-3.0m cc=2
Acacia bivenosa (2), Enneapogon caerulescens (+), Santalum lanceolatum (+).
STRATUM 3 Shrubs 1.6-1.9m cc=13.5
Acacia kempeana (10), A. tetragoaphylla (1), A. aff. aneura KRN 10709 (+), Cassia glutinosa (1), C. leurssenii (1).
STRATUM 4 Misc. plants 0.1-0.9m cc=20
Acacia victoriae (+), Cassia pruinosa (+), Dysphania kalpari (1), Eriachne dominii (1), Gnephosis sp. KRN KRN 10780 (2), Lepidium pholidagynum (1), Triodia basedowii (15).

No. of TAXA: 16 LAST BURNT: ca 35 years
MODIFICATION: None

LANDFORM
BEDROCK: Brockman Ironstone Formation.
UNIT: Undulating upland ELEMENT: Slope, >5°

SOIL
ORIGIN: In situ weathering DEPTH: N/R (probably skeletal)
PRIMARY FORM: Uniform DRAINAGE: Normal
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: nil STONE: 0-5%, patchy, subangular, 2-8cm.
PAVEMENT: 50-90% even, 5-15mm.
LITTER: nil
PROFILE: Friable, 20-40% angular Brockman ironstone formation, 1-4cm.

NEWMAN 5

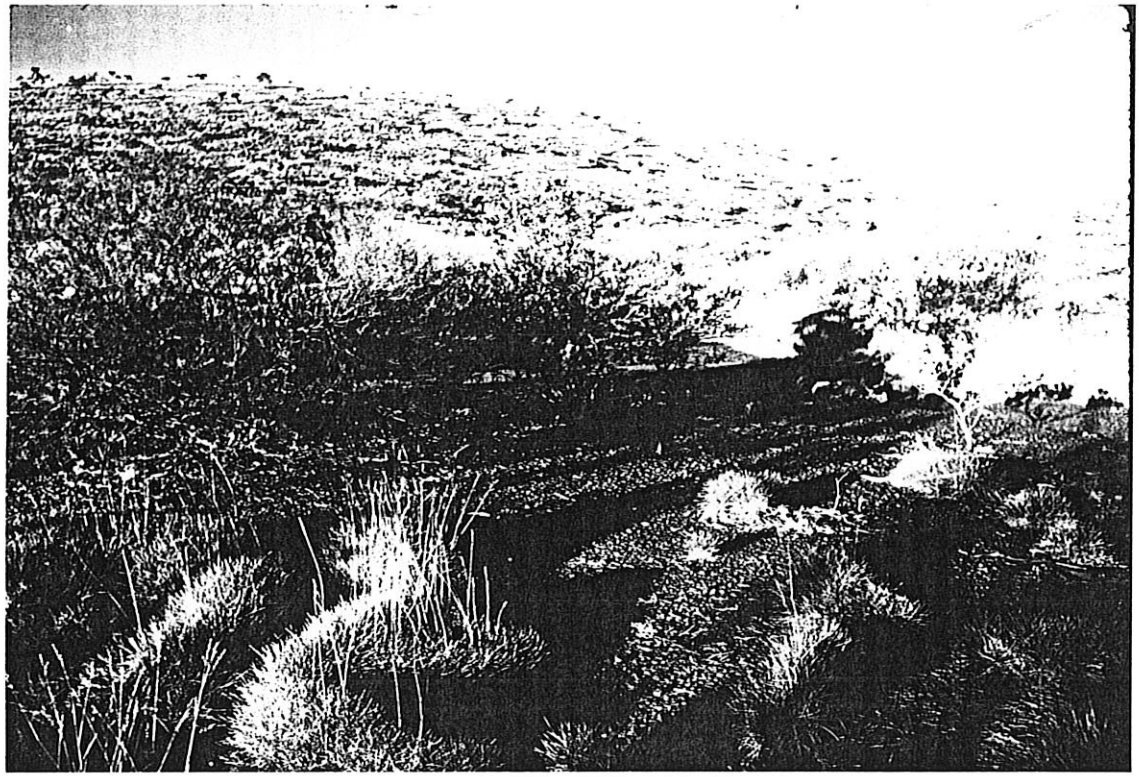
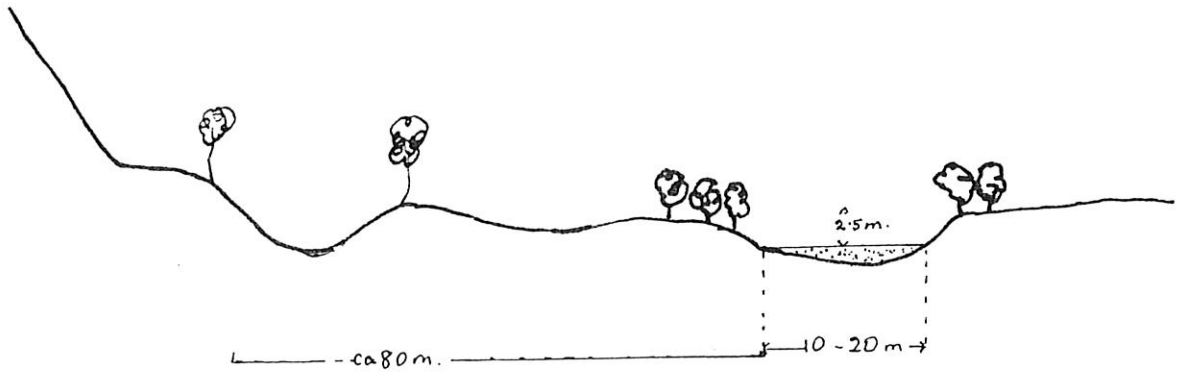


FIG. 7

RIVER 1



Pools sinuous to 200m. long, 1m. deep

FIG. 8

RIVERINE LAND SYSTEM 1.

REGION: PILBARA AREA: DUCK CREEK DATE: 1-8-84

LOCATION: 8 km NE Quarry Hill. Lat. 22 28' 10" S, Long. 116 37' 47" E
SIZE: ca 8 ha.

VEGETATION

TYPE: Eucalyptus camaldulensis Open low woodland

MUIR: LAr.Sr.Jr

STRATUM 1 Trees 12-14m cc=6
Eucalyptus camaldulensis (4), E. coolabah (1), Melaleuca leucadendra (1).
STRATUM 2 Shrubs 3-4m cc=2
Acacia citriniviridis (+), A. coriacea (+), A. pyrifolia (+), Carissa lanceolata (+), Melaleuca glomerata (2).
STRATUM 3 Misc. plants 1-2m cc=1.6
Acacia strongylophylla (+), Gossypium robinsonii (+), Indigofera monophylla (+),Mukia maderaspantana (+), Sesbania cannabina (1), Sonchus oleraceus (+), Typha domingensis (+),
STRATUM 4 Misc. plants 0.1-0.8m cc=15
Amaranthus pallidiflorus (+), Ammania multiflora (+), Argemone mexicana (3), Boerhavia repleta (+), Cenchus ciliaris (+), Centipeda minima (1), Cleome viscosa (+), Corchorus walcottii (+), Cyperus hamulosis (+), C. difformis (+), C. vaginatus (1), Dysphania rhadinostachya (+), Eleocharis geniculata (+), E. astropurpurea (+), Eragrostis japonica (2), Eriachne benthamii (+), Eriachne sp.KRN 10627 (+), Euphorbia coghanii (+), Euphorbia sp. KRN 10597 (+), Fimbristylis microcarya (+), Flaveria austrasica (2), Heliotropium crispatum (+), Imopoea muelleri (+), Lobelia quadrangularis (+), Marsilia mutica (+), Neptunia diamorphantha (+), Nicotiana occidentalis (+), Oldenlandii crouchiana (+), Pluchea rubelliflorus(+), Polymeria sp. (+), Potomogeton tricarinatus (+), Rostellularia pogonanthera (+), Schoenoplectus dissancanthus (+), S. littoralis var. sub (+),Setaria dielsii (3), Stemodia viscosa (+), Tephrosia rosea (+), ? Tephrosea (+), Trichodesma zelanicum (+), Vigna lanceolata (+), Wahlenbergia sp. KRN 10641, Poaceae sp. KRN 10611 (+).
No. of TAXA: 58 LAST BURNT: Never burnt
MODIFICATION: Grazing- light to moderate.

LANDFORM
BEDROCK: Unknown
UNIT: River ELEMENT: Bed

SOIL
ORIGIN: Alluvial DEPTH: Moderate (90-200cm)
PRIMARY FORM: Uniform DRAINAGE: Winter-wet, summer-dry
PROFILE ATTRIBUTES: Stony SURFACE: Crusting
ROCK: nil STONE: 10-30%, even, rounded, 2-18cm.
PAVEMENT: 5-95%, even, 3-18mm long.
LITTER: nil
PROFILE: A 0-1m+ Lenses of both sorted and unsorted material, ranging from red-brown silt to rounded stone 25cm long. pH6.5.

RIVERINE LAND SYSTEM 2.

REGION: PILBARA AREA: DUCK CREEK DATE: 5-8-84

LOCATION: 9 km ESE Quarry Hill. Lat. 22° 33' 40" S, Long. 116°39' 43" E
SIZE: 0.5 ha.
VEGETATION TYPE: Acacia citrinoviridis Scrub
MUIR: Si.Hr

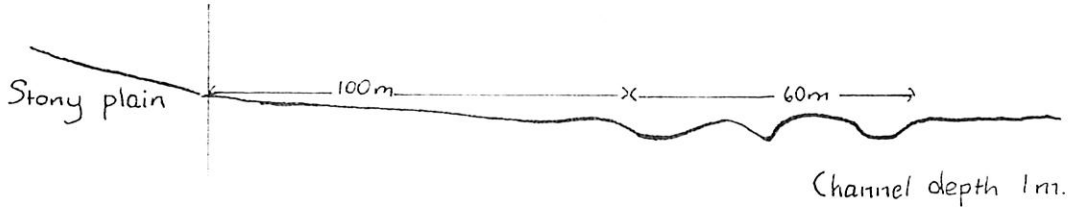
STRATUM 1 Shrubs >2m cc=20.5
Acacia citrinoviridis (20), Ehretia saligna (+), Grevillea ?stenobotrya (+), Porana sericea (+).
STRATUM 2 Shrubs 1-2m cc=0.7
Acacia pyrifolia (+), Cassia glutinosa (+), Jasminum lineare (+), Mukia maderaspatana (+), Indigofera monophylla (+).
STRATUM 3 Misc. plants cc=30
Abutilon muticum (+), Actinobole uliginosum (+), Amaranthus pallidiflorus (+), Ameyema maidenii (+), Aristida contorta (+), Boerhavia relpeta (+), Calotis hispidula (+), Cassia helmsii (+), C. ologophylla (+), Cenchrus ciliaris (3), Chenopodium meelanocarpum (+), Cleome viscosa (+), Corchorus walcottii (1), Cymbopogon bombycinus (+), Dactylocenum radulans (+), Dysphania rhadinostachya (2), Enchlaena tomontosa (+), Enneapogon caerulescens (+), Eriachne dominii (2), Eragrostis falcata (+), Evulvulus alsinoides (+), Goodenia iyouta (+), Helipterum humboldtianicum (+), Hybanthus enneaspermus (+), Indigofera colutea (+), Lepidium platypetalum (+), L. oxytrichum (+), Malvasrtum americanum (+), Paspalidium clementii (2), Perotis rara (+), Portulaca ?oleracea (+), Ptilotus clementii (+), P. exultatus (+), P. helipteroides (+), P. obovatus (2), Rhagodia eremaea (+), Salsola kali (+), Setaria dielsii (2), Sida echinocarpa (+), Sida ? virgata (+), Solanum cleistoganum (+), S. lasiophyllum (+), Sporobulus australasicus (8), Themeda australis (+), Tribulus platypterus (+), Tribulus terrestris (+), Trichodesma zeylanicum (+), Triodia pungens (5).

No. of TAXA: 63 LAST BURNT: > 50 years
MODIFICATION:

LANDFORM
BEDROCK: unknown
UNIT: Flood plain ELEMENT: Creek line - Boolgeeda Creek

SOIL
ORIGIN: Alluvial DEPTH: Moderate -90-100cm
PRIMARY FORM: Uniform DRAINAGE: Normal
PROFILE ATTRIBUTES: Stony SURFACE:
ROCK: nil STONE: 5% cover, patchy, subrounded, 2-10cm.
PAVEMENT: 20-90% cover, even, 5-20mm.
LITTER: 10% cover, a few branches, trunks and broad leaves.
PROFILE: A 0-unstated. Friable to loose sediments both sorted and unsorted; grades from red silts and clays to subrounded and flat stone 8-20 cm long.

RIVER 2



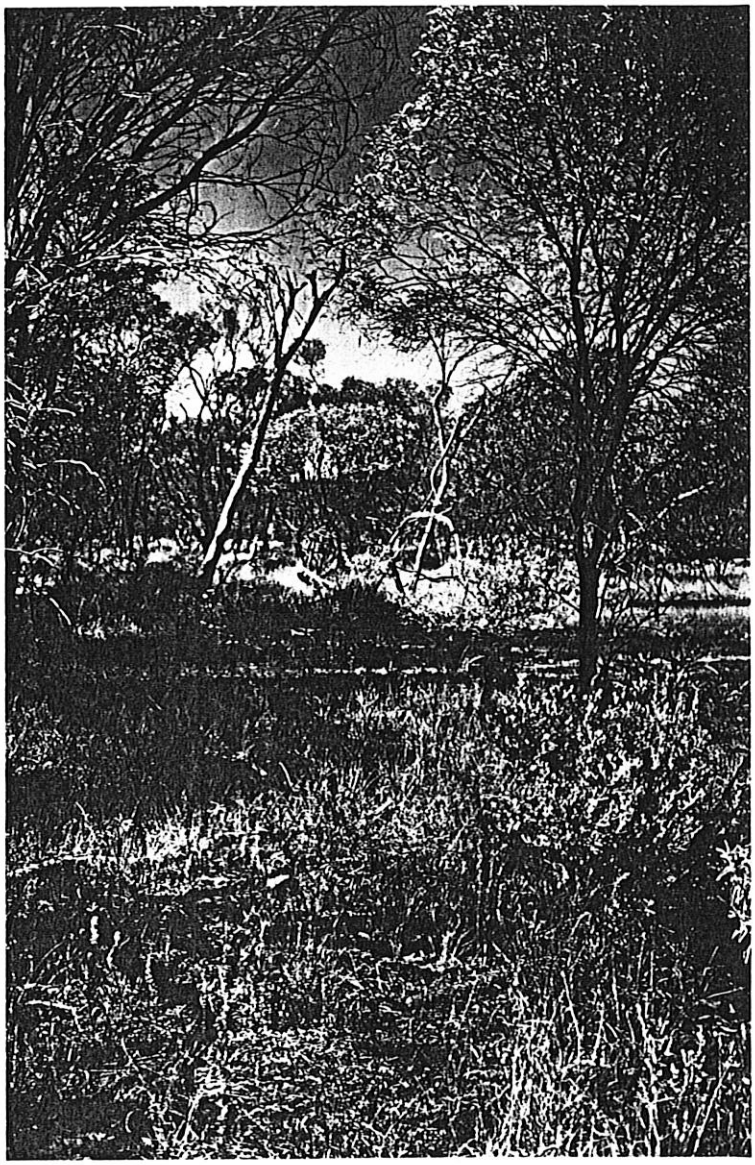


FIG. 9

RIVER 3

FIG. 10

RIVERINE LAND SYSTEM 3.

REGION: PILBARA AREA: DUCK CREEK DATE: 8-8-84

LOCATION: 2 km NNW Quarry Hill. Lat. 22°30' 44" S, Long. 116°34' 13" E
SIZE: 0.5 ha.
VEGETATION TYPE: Mixed acacia thicket
MUIR: Sc.GLd
STRATUM 1 Shrubs 3-6m cc=32
Acacia citrinoviridis (5), A. farnesiana (1), A. sclerosperma (15), A. victoriae (10), Hakea suberea (1), Santalum lanceolatum ssp. lanceolatum (+).
STRATUM 2 Shrub 1.8m cc=(+)
Stylobasium spathulatum (+)
STRATUM 3 Misc. plants cc=99
Calandrinia sp. KRN 10754 (+), Cenchrus ciliaris (99).
No. of TAXA: 9 LAST BURNT: ca 80
MODIFICATION: Heavy grazing by cattle; Cenchus ciliaris introduced.
LANDFORM
BEDROCK: Unknown
UNIT: PLain ELEMENT: River flat up to 250m wide

SOIL
ORIGIN: Alluvial DEPTH: Moderate 90-200m wide
PRIMARY FORM: Uniform DRAINAGE: Normal
PROFILE ATTRIBUTES: Not recorded SURFACE: Hardsetting
ROCK: nil STONE: nil PAVEMENT: nil
LITTER: 1% cover, a few branches.
PROFILE: A 0-100+ cm Friable 1-2% inclusions 3-8mm long, patchy distribution.

ROBE 1.

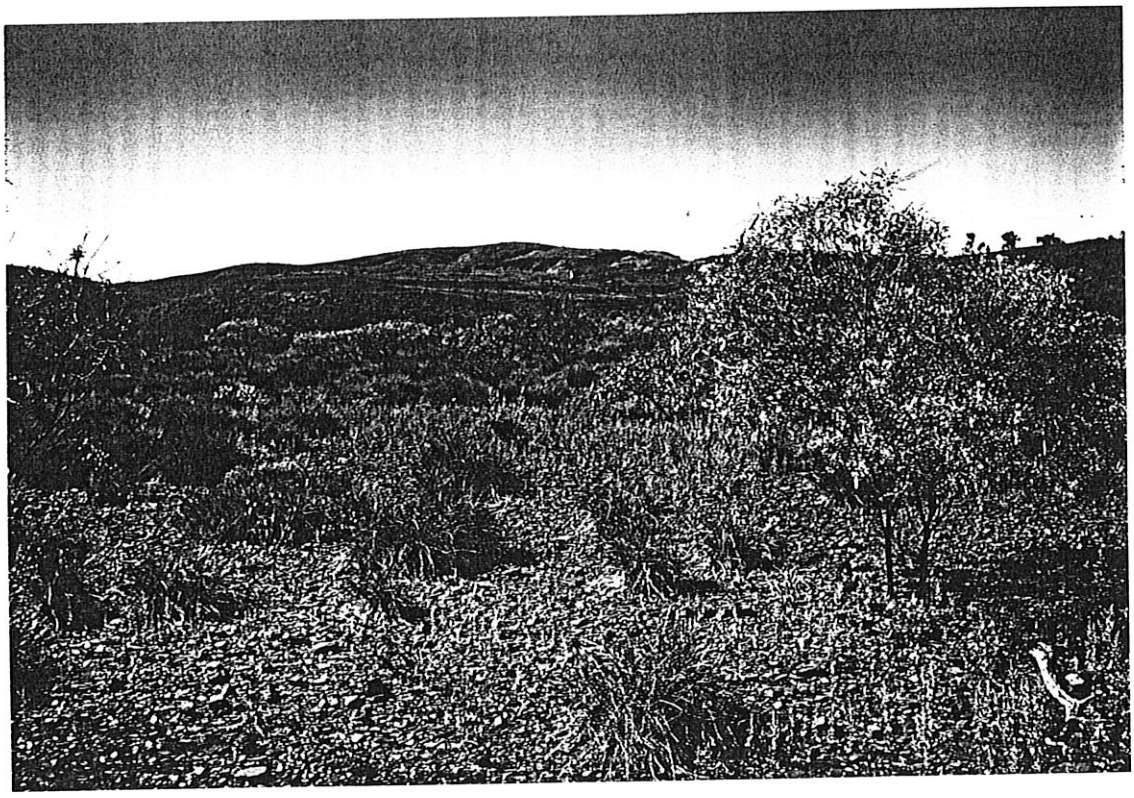
REGION: PILBARA AREA: DUCK CREEK DATE: 5-8-84

LOCATION: 12 km ESE Quarry Hill. Lat. 22 33' 20" S, Long. 116 41' 45" E
SIZE: 1 ha.
VEGETATION TYPE: Mixed acacia scrub
MUIR: Sr.SAr.Hi
STRATUM
No. of TAXA: 43 LAST BURNT: ca 40
MODIFICATION: Little evidence of grazing

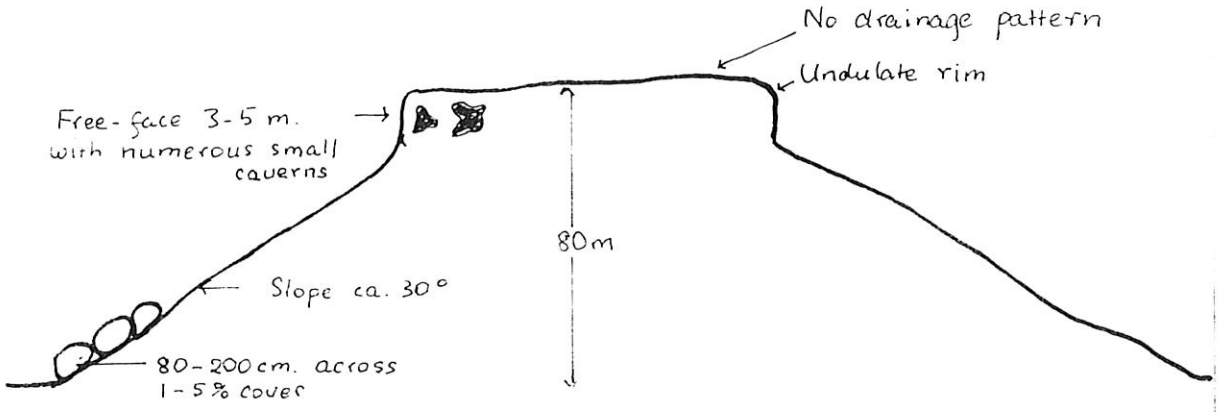
LANDFORM
BEDROCK: Brockman Ironstone Formation,Robe River Pisolite.
UNIT: Plain ca 800m wide ELEMENT: Slope <1°

SOIL
ORIGIN: Colluvial and in situ weathering DEPTH: Deep >200cm
PRIMARY FORM: Uniform DRAINAGE: Normal
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: nil STONE: 5-10%, subangular, 2-10cm BIF.
PAVEMENT: 20-70% cover, even, 10-20mm.
LITTER: nil
PROFILE: A 0-? On surface 2-3m of fine black sand. Friable, 30-40% flat and subangular BIF 1-5cm long.

ROBE 1



ROBE 2, 3



ROBE 2 Summit
ROBE 3 SLOPE

FIG 11

ROBE 2

REGION: PILBARA AREA: DUCK CREEK DATE: 2-8-1984

LOCATION: Quarry Hill. Lat. 22° 31'44" S, Long. 116° 34'54" E.
SIZE: 2 ha.
VEGETATION TYPE: Acacia arida open scrub MUIR: Sr.Hc
STRATUM 1 Trees 5m cc=0.5
Eucalyptus leucophloia (0.5)
STRATUM 2 Shrubs 2-3.5m cc=4
Acacia arida (2), A. bivenosa (+), A. citrinoviridis (+), A. victoriae (+), A. xiphophylla (2).
STRATUM 3 Shrubs 1-1.8m cc=0.4
Acacia ancistrocarpa (+), A. pyrifolia (+), Cassia glutinosa (+), C. leurssenii (+), Ficus platypoda (+), Jasminum lineare (+), Solanum sturtianum (+), Stylobasium spathulatum (+).
STRATUM 4 Misc. Plants 0.1-0.9m cc=33
Aerya javanica (+), Amaranthus pallidiflorus (+), Boerhavia repleta (+), Bulbostylis barbata (+), Cassia helmsii (+), C. nobilis (+), C. oligophylla (+), Corchorus walcottii (+), Chloris barbata (+), Cleome viscosa (+), Cyperus cunninghamii (+), Dysphania kalpari (0.4), D. rhadinostachya (+), Enneapogon caerulescens (+), Enchleana tomentosa (+), Eragrostis elongata 8+), Eriachne dominii (+), Eriachne sp. KRN 10627 (+), Euphorbia australis (+), Gomphrena cunninghamii (+), Goodenia tenuiloba (+), Hibiscus sp. KRN 10646 (+), Lepidium oxytrichum (+), Maireana georgei (+), Polycarpaea longilflora (+), Portulaca olerarea (+), Ptilotus aeroides (+), P. astrolasius (+), P. calostachyus (+), P. exultatus v. exultatus (+), P. gaudichaudi v. gaudichaudi (0.4), P. helipteroides (+), P. obovatus (+), P. polystachyus f. rubriflorus (+), Sida aff. cardiophylla KRN 10650, Solanum cleistoganum (+), Solanum lasiophyllum (+), Tribulus platypterus (+), Trichodesma zeylandicum (+), Triodia angusta (1), Triodia basedowii (30).

No. of TAXA: 55 LAST BURNT: Unknown
MODIFICATION: Moderate grazing
LANDFORM
BEDROCK: Laterized pisolitic iron oxides
UNIT: Mesa ELEMENT: Summit
SOIL
ORIGIN: In situ weathering DEPTH: Skeletal
PRIMARY FORM: Uniform DRAINAGE: Dry
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: 5-15%, patchy STONE: 80-95%, even, subangular to subrounded, 5-25 cm long laterized material. PAVEMENT: 0-20%, patchy, 10-20mm.
LITTER: Nil
PROFILE: A 0-15cm Friable, 40-60% subangular inclusions, 5-12mm across. Boundary sharp, undulate to irregular, no obvious weathering zone.

ROBE 3

REGION: PILBARA AREA: DUCK CREEK DATE: 2-8-1984

LOCATION: Quarry Hill. Lat. 22° 31'44" S, Long. 116° 34'54" E.
SIZE: 1 ha.
VEGETATION TYPE: Hummock grass MUIR: Hi
STRATUM 1 Shrubs 1.1-1.8m cc=4.5
Acacia crassifolia (4), A. xiphophylla (+), Stylobasium spathulatum (+).
STRATUM 2 Misc. plants 0.1-0.9m cc=26
Acacia strogylophylla (+), Amyema preissei (+), Cassia leurssenii (+), Cymbopogon bombycinus (+), Dysphania rhadinostachya (+), Eriachne sp. KRN 10627 (+), Hybanthus enneaspermus 8+), Maireana georgei (+), Nicotiana occidentalis (+), Polycarpaea longiflora (+), Ptilotus obovatus (+), Tribulus platypterus (+), Triodia basedowii (25).

No. of TAXA: 16 LAST BURNT: Unknown
MODIFICATION: Moderate grazing

LANDFORM
BEDROCK: Laterized pisolitic iron oxides
UNIT: Mesa ELEMENT: Slope

SOIL
ORIGIN: Colluvial DEPTH: Skeletal to shallow
PRIMARY FORM: Uniform DRAINAGE: Dry
PROFILE ATTRIBUTES: Stony SURFACE: Hardsetting
ROCK: N/R STONE: N/R PAVEMENT: N/R
LITTER: N/R
PROFILE: N/R

FLORISTIC LIST

Taxa are listed alphabetically by family and then by species. Nomenclature follows that of Western Australian Herbarium (PERTH) (Green 1981).
The flora list includes both site data and incidental records of plant species from equivalent locations.

Each taxon has been assessed for frequency and cover/abundance in each of the main vegetation types (Muir 1977) recorded in each land system. Within each land system, vegetation types are listed from tallest and densest, to lowest and most open.

Vegetation Types
BOOLGEEDA Land System
B1 = Acacia citrinoviridis Scrub
B2 = Acacia xiphophylla Scrub
B3 = Acacia inaequilatera Open Scrub
CAPRICORN Land System
C1 = Eucalyptus leucophloia Open Low Woodland A (quartzite)
C2 = Mixed Scrub (dolomite)
NEWMAN Land System
N1 = Eucalyptus leucophloia Low Woodland A (basalt)
N2 = Eucalyptus camaldulensis Open Low Woodland A (BIF)
N3 = Eucalyptus leucophloia Open Low Woodland A (BIF)
N4 = Eucalyptus leucophloia Open Low Woodland A (Basalt)
N5 = Acacia bivenosa Scrub (BIF)
N6 = Spring (basalt)
RIVER Land System
R1 = Eucalyptus camaldulensis Open Low Woodland A
R2 = Acacia citrinoviridis Scrub
R3 = Mixed thicket
ROBE Land System
T1 = Mixed Acacia Open Scrub
T2 = Acacia arida Open Scrub
T3 = Triodia basedowii Hummock Grass

Frequency and Abundance/Cover

FREQUENCY	COVER/ABUNDANCE
A = 1 or 2 populations	1 = 1 or 2 plants
B = Few "	2 = Few plants
C = Scattered "	3 = Few plants to 1% canopy cover
D = Frequent "	4 = 1-5% canopy cover
E = Common "	5 = 6-30% " "
	6 = 31-70% " "

Coll. No. = Ken Newbey collecting number (KRN)
P = Field herbarium collecting number (see note page 13)

Coll. No.	Species	BOOLGEED B1	B2	B3	CAPRI C1	C2	NEWMAN N1	N2	N3	N4	N5	N6	RIVER R1	R2	R3	ROBE T1	T2	T3	
.....	. . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
ACANTHACEAE																			
10667	Dicladanthera forrestii . .	..	..	..	..	..	..	..	..	..	..	..	..	B2	..	..	..	..	...
10811	Dipteracanthus corynothecus .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	...
10676	Rostellularia pogonanthera .	..	..	..	..	..	..	..	..	..	..	..	C2	..	..	..	..	..	...
ADIANTACEAE																			
10660	Cheilanthes lasiophylla . .	..	..	..	B3	..	..	..	B1	..	B2	B2	..	..	..	..	..	..	...
10797	Cheilanthes sp.. . . .	..	..	..	A1	..	..	..	..	..	A3	..	..	..	..	..	..	..	...
AIZOACEAE																			
10774	Trianthema oxycalyptera .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	...
10278	Trianthema pilosa . . .	A2	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	..	..	...
10581	Zaleya galericulata . . .	B1	..	A3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
AMARANTHACEAE																			
10628	Achyranthes aspera . . .	..	..	..	..	..	..	..	..	..	..	..	B2	..	..	..	..	..	...
.....	*Aerva javanica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	...
10576	Alternanthera nodiflora . .	C2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
10577	Amaranthus pallidiflorus . .	C3	..	E3	B1	B2	..	D3	..	..	..	A1	E3	D3	..	..	B2	..	...
10779	Gomphrena cunninghamii . .	..	..	..	C2	..	..	C3	A2	..	..	..	..	..	..	C4	B2	B2	...
10753	Ptilotus aervoides . . .	..	..	B4	..	..	..	..	..	..	..	..	..	..	..	B4	B3	..	...
10799	Ptilotus appendiculatus . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	...
10610	Ptilotus astrolasius . .	..	..	B2	..	..	..	..	..	..	..	..	..	..	..	B1	..	..	...
10752	Ptilotus axillaris . . .	..	..	A2	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	...
10816	Ptilotus calostachyus . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	B2	C2	..	...
10651	Ptilotus clementii . . .	..	..	C2	B1	..	..	..	..	..	..	..	..	A2	..	A1	C2	..	...
10596	Ptilotus exaltatus . . .	B2	D1	E3	..	..	..	..	..	..	..	..	..	B1	..	B2	B2	..	...
10817	Ptilotus helipteroides . .	..	..	B3	..	..	..	..	..	..	..	..	..	B2	..	A4	A2	..	...
10732	Ptilotus obovatus . . .	..	D1	E2	D3	D1	..	C3	B1	C1	..	..	..	E4	..	D2	B2	C1	...
10644	Ptilotus polystachys v. rubriflorus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	...
10649	Ptilotus fusiformis v. fusiformis	..	..	..	..	..	..	..	..	A2	..	..	..	..	..	A1	B3	..	...
APIACEAE																			
10696	Daucus glochidiatus . . .	..	..	..	..	A3	..	..	..	..	..	B2	..	..	..	..	..	..	...
10653	Trachymene glaucifolia . .	B1	..	A2	..	..	..	B2	..	..	..	..	..	..	..	B3	..	..	...
10813	Trachymene oleracea . . .	C1	..	..	..	..	..	B3	A2	C3	..	..	..	..	..	B2	..	..	...
APOCYNACEAE																			
.....	Carrisa lanceolata . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	...
ARALIACEAE																			
10661	Astrotricha hamptonii . .	..	..	..	..	..	..	C3	B3	..	..	..	..	..	..	..	..	..	...
ASCEPIADACEAE																			
P114.	? Cynanchium	..	..	..	..	..	..	A1	..	..	..	..	..	..	..	..	..	..	...
10711	Rhyncharrena linearis . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	...
10659	Sarcostemma australe. . .	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	..	..	...
ASTERACEAE																			
10736	Actinobole uliginosum . .	..	..	A2	..	..	..	..	..	..	..	..	..	A2	..	..	..	..	...
10575	Calocephalus sp. . . .	B3	..	B3	..	..	..	..	..	A3	..	..	..	..	..	..	..	..	...
10595	Calotis hispidula . . .	..	..	B3	B2	B3	..	..	..	B2	..	B2	..	A3	..	..	..	..	...
10593	Calotis multicaulis . . .	..	..	B3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
.....	Centipeda minima . . .	..	..	..	..	..	..	..	..	..	..	..	C3	..	..	..	..	..	...
10795	Chrysopogon trichodesmoides .	..	..	A2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
10613	Flaveria australasica . .	..	..	B2	..	..	..	..	..	..	..	..	D3	..	..	..	..	..	...
10780	Gnephosis sp.	..	B2	A3	..	..	..	..	..	B3	B4	..	..	..	..	..	..	..	...
10666	Helipterum humboldtiana . .	..	..	..	..	..	..	..	..	..	..	..	..	A3	..	..	..	..	...
10716	Helipterum margarethae . .	B2	..	..	B2	..	..	D3	..	A2	..	B2	..	..	..	A3	..	..	...
10744	Ixiochlamys cuneifolia . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	...
10791	Minuria sp.	..	..	A3	B3	..	..	..	..	..	..	..	..	..	..	..	..	..	...
.....	Pluchea rubelliflora. . .	..	..	..	..	..	B1	D3	..	..	..	..	B2	..	..	..	..	..	...
.....	Pterocaulon serralatum v. velutiass	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...
.....	Pterocaulon sphaeranthoides .	..	..	A1	..	..	..	..	..	..	..	..	..	..	..	B1	..	..	...
10633	Sigesbeckia orientalis . .	..	..	..	..	..	..	B3	..	..	..	..	A3	..	..	..	..	..	...
10679	*Sonchus oleraceus . . .	..	..	..	..	..	..	A2	..	..	..	..	A1	..	..	..	..	..	...
BORAGINACEAE																			
.....	Ehretia saligna . . .	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	...
10636	Heliotropium crispatum . .	..	..	..	..	..	..	..	..	..	..	..	D2	..	..	..	..	..	...
10751	Heliotropium cunninghamii .	..	..	A1	..	..	..	..	..	..	..	..	..	..	..	A3	..	..	...
10749	Heliotropium heteranthum . .	..	E3	..	..	..	..	..	..	..	..	..	..	..	..	B2	..	..	...
10704	Trichodesma zeylanicum . .	D2	..	C1	B1	B1	B1	B2	B1	..	..	..	A2	B1	..	B1	A1	..	...
BRASSICACEAE																			
10573	Lepidium oxytrichum . . .	C3	..	..	..	B3	..	B3	..	A2	..	..	..	A3	..	..	B3	..	...
10737	Lepidium platypetalum . .	..	..	..	..	..	..	..	..	..	..	..	..	A3	..	..	..	..	...
10758	Lepidium pholidogynum . .	..	..	..	..	..	..	..	..	..	A3	..	..	..	..	..	..	..	...
10815	Stenopetalum anfractum . .	..	..	A1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...

Coll. No.	Species	BOOLGEED B1	B2	B3	CAPRI C1	C2	NEWMAN N1	N2	N3	N4	N5	N6	RIVER R1	R2	R3	ROBE T1	T2	T3	
.....	. . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
CAESALPINIACEAE																			
10766	Cassia glutinosa . . .	..	..	C2	D3	C1	C3	C3	C1	D3	E3	..	..	B2	..	..	C3	..	...
10816	Cassia helmsii	..	B1	C2	..	..	C3	..	..	..	..	..	..	B1	..	..	C2	..	...
10812	Cassia leurssenii . . .	..	E2	..	..	..	D4	..	..	..	D3	..	..	..	..	C2	C3	B1	...
10706	Cassia notabilis . . .	..	..	C4	..	..	..	..	..	..	..	..	..	..	..	A1	A1	..	...
10794	Cassia oligophylla . . .	..	..	..	B1	C3	D3	..	B1	..	..	..	..	B1	..	C3	B1	..	...
10768	Cassia pruinosa . . .	..	..	C2	..	C1	..	..	..	C2	C2	..	..	..	..	..	..	..	...
10776	Cassia venusta	..	..	..	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	...
10772	Petalostylis labicheoides .	..	..	..	..	..	D3	..	..	..	C3	..	..	..	..	C3	..	..	...
CAMPANULACEAE																			
10641	Wahlenbergia sp. . . .	..	..	..	..	..	..	..	..	..	..	..	B1	..	..	..	..	..	...
CAPPARACEAE																			
.....	Capparis spinosa . . .	..	..	..	..	A1	..	B2	..	..	..	..	..	..	..	..	..	..	...
10621	Cleome viscosa	D3	..	..	..	A2	..	C3	B2	..	..	..	D3	B2	..	..	A2	..	...
CARYOPHYLLACEAE																			
10728	Polycarpaea holtzei . . .	..	..	E3	..	..	..	..	..	A3	..	..	..	..	..	A3	..	..	...
10574	Polycarpaea longiflora . .	C3	..	..	..	..	B2	D4	B2	B2	..	..	..	..	..	B1	A2	A2	...
CHENOPODIACEAE																			
10600	Chenopodium melanocarpum . .	B2	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	..	..	...
10583	Dysphania rhadinostachya . .	D3	..	E4	D3	B2	..	D3	C3	D3	..	..	B3	D4	..	D3	B3	A2	...
10662	Dysphania kalpari . . .	..	..	..	..	..	..	..	..	..	D3	..	..	..	..	B3	B3	..	...
10579	Enchylaena tomentosa . .	C2	C2	..	..	..	..	..	..	..	..	..	..	C1	..	..	B1	..	...
10801	Maireana georgei . . .	..	..	B1	B1	..	..	..	..	..	..	..	..	..	..	B2	B1	A1	...
10739	Maireana melanocoma . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
10738	Maireana tomentosa . . .	..	B1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
10634	Rhagodia eremaea . . .	..	..	..	..	..	..	..	..	..	..	..	A1	A1	..	..	..	..	...
10702	Salsola kali	D2	B1	B1	..	..	..	..	..	..	..	..	..	B1	..	B1	..	..	...
10743	Sclerolaena eriacantha . .	..	E5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
.....	Sclerolaena muricata var. villosa	..	..	D3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
10599	Sclerolaena convexula . .	..	..	A2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
COMMELINACEAE																			
10796	Commelina ensifolia . . .	..	..	..	A1	..	..	..	..	..	..	..	..	..	..	..	..	..	...
CONVOLVULACEAE																			
10790	Convolvulus erubescens . .	A1	..	..	A1	..	..	..	..	..	..	..	..	..	..	A1	..	..	...
10727	Evolvulus alsinoides v.villosicalyx	..	..	..	..	..	..	..	..	..	..	..	..	B1	..	..	..	..	...
10637	Imopoea costata . . .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...
10638	Imopoea muelleri . . .	..	..	B1	..	..	..	..	..	..	..	..	B1	..	..	..	..	..	...
10750	Polymeria sp. . . .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	A3	..	..	...
10603	Porana sericea	B2	..	..	A1	..	..	B2	..	..	..	..	B1	B2	..	..	..	..	...
CUCURBITACEAE																			
10601	Mukia maderaspantana. . .	C1	..	C1	B1	B2	..	B1	..	..	..	..	B1	B1	..	B1	..	..	...
CYPERACEAE																			
10733	Bulbostylis barbata . . .	A2	..	..	..	..	..	..	B2	C3	..	..	..	C3	..	..	A2	..	...
10645	Cyperus cunninghamii . .	..	..	..	..	..	..	B3	..	..	..	..	..	..	..	..	C2	..	...
10615	Cyperus difformis . . .	..	..	..	..	..	..	..	..	..	..	..	B3	..	..	..	..	..	...
10673	*Cyperus hamulosus . . .	..	..	..	..	..	..	..	..	..	..	..	B2	..	..	..	..	..	...
10746	Cyperus pygmaeus . . .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...
10612	Cyperus vaginatus . . .	..	..	..	..	..	..	D3	..	..	..	..	E3	..	..	..	..	..	...
10671	Eleocharis atropurpurea . .	..	..	..	..	..	..	..	..	..	..	..	A3	..	..	..	..	..	...
10672	Eleocharis geniculata . .	..	..	..	..	..	..	..	..	..	..	..	B2	..	..	..	..	..	...
10788	Fimbristylis dichotoma . .	..	..	..	..	..	..	..	..	..	A3	..	..	..	..	..	A2	..	...
10675	Fimbristylis microcarpa . .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...
10674	Schoenoplectus dissachanthus .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...
10701	Schoenoplectus litoralis var. sub	..	..	..	..	..	..	..	..	..	..	..	B3	..	..	..	..	..	...
EUPHORBIACEAE																			
10787	Adriana tomentosa . . .	..	..	..	..	..	..	..	..	..	..	..	A2	..	..	..	..	..	...
10685	Euphorbia australis . . .	C3	C1	C2	..	B3	..	B3	B2	..	..	..	..	..	..	..	B2	..	...
10588	Euphorbia coghlanii . . .	C2	..	..	..	..	..	C3	..	..	..	..	D3	..	..	..	..	..	...
.....	Euphorbia drummondii . .	..	..	..	..	..	..	..	..	A2	..	..	..	..	..	..	..	..	...
10597	Euphorbia sp. . . .	C3	..	C3	..	..	..	B2	..	A2	..	..	B2	..	..	..	..	..	...
10686	Leptopus decaisnei . . .	B2	..	..	..	A1	..	B2	..	..	..	..	..	..	..	..	..	..	...
10807	Phyllanthus ciccoides . .	..	..	..	..	..	..	D4	..	..	..	C3	..	..	..	..	..	..	...
10715	Phyllanthus lacunellus . .	..	..	B1	..	..	..	..	..	B1	..	..	..	..	..	C3	..	..	...
.....	Securinega melanthesoides .	..	..	..	..	..	..	..	..	..	..	..	A1	..	..	..	..	..	...

Coll. No.	Species	BOOLGEED B1 B2 B3	CAPRI C1 C2	NEWMAN N1 N2 N3 N4 N5 N6	RIVER R1 R2 R3	ROBE T1 T2 T3	
GOODENIACEAE							
10631	Goodenia iyouta.	.. .. ..	.. ..	.. ..	A1 A3 ..	.. .. ..	...
10620	Goodenia lamprosperma	.. .. ..	.. ..	.. ..	B2	.. .. ..	...
10724	Goodenia microptera .	.. .. ..	.. ..	.. ..	.. .. ..	B2	...
10656	Goodenia scaevolina ssp. stobbsiana	.. .. ..	.. ..	.. .. B2 ..	.. .. ..	.. .. ..	...
10643	Goodenia tenuiloba	.. .. ..	.. ..	.. ..	.. .. ..	.. B1 ..	...
10757	Scaevola sp.	.. .. ..	.. ..	.. .. A1	.. .. ..	.. .. ..	...
HALORAGACEAE							
10725	Haloragis gossei	.. .. ..	.. ..	.. ..	.. .. ..	B1	...
LOBELIACEAE							
10640	Lobelia quadrangularis	.. .. ..	.. ..	.. ..	A1	.. .. ..	...
10717	Lobelia sp.	.. .. ..	.. ..	.. ..	.. .. ..	A1	...
LORANTHACEAE							
10618	Amyema maidenii.	.. .. ..	.. ..	.. ..	A2 A1 ..	.. .. ..	...
10619	Amyema preissii.	.. .. ..	.. ..	A1 A1	A2	.. .. A1	...
10624	Amyema miquelii	.. .. ..	.. ..	.. ..	A1	.. .. ..	...
LYTHRACEAE							
10669	Ammannia multiflora	.. .. ..	.. ..	.. ..	B2	.. .. ..	...
10769	Rotala mexicana.	.. .. ..	.. ..	.. A4	.. .. ..	.. .. ..	...
MALVACEAE							
10606	Abutilon cf. lepidum.	C2	B2 ..	.. C3	.. B3 ..	.. .. ..	...
P86	Abutilon sp.	.. .. ..	.. ..	.. ..	.. A1 ..	.. .. ..	...
10390	Gossypium australe	.. .. ..	.. ..	B3	.. .. ..	.. .. ..	...
10630	Gossypium robinsonii.	.. .. ..	.. B4	D3 C3 .. A2	E3	.. .. ..	...
10646	Hibiscus coatesii	.. .. ..	.. ..	.. ..	.. .. ..	.. B1 ..	...
10747	Hibiscus goldsworthii	.. .. ..	.. ..	.. ..	.. .. ..	.. A1 ..	...
P93	Hibiscus sp.	.. .. ..	.. ..	.. ..	.. .. ..	A1	...
P106	Hibiscus aff. coatesii	.. .. ..	A1 ..	.. ..	.. .. ..	.. .. ..	...
10629	*Malvastrum americanum	.. .. ..	.. ..	.. ..	E3 B3 ..	.. .. ..	...
10731	Sida echinocarpa	.. A1 B1	.. B2	.. ..	.. A1 ..	A1	...
10650	Sida aff. cardiophylla	.. .. ..	.. ..	.. ..	.. .. ..	.. A1 ..	...
10692	Sida aff. virgata	.. .. ..	.. ..	B1 B2 .. .. .. A2	.. A1 ..	.. .. ..	...
MARSILEACEAE							
10677	Marsilea mutica.	.. .. ..	.. ..	.. ..	A3	.. .. ..	...
MENISPERMACEAE							
.....	Tinospora smilacina Benth.	.. .. ..	.. A1	.. A1	.. .. ..	.. .. ..	...
MIMOSACEAE							
10742	Acacia ancistrocarpa	.. .. D2	.. ..	.. .. .. B1	.. .. ..	C4 B1 ..	...
10709	Acacia aneura	.. .. ..	.. ..	.. B2	.. .. ..	C2	...
10712	Acacia aneura (a form)	.. .. ..	.. ..	.. ..	.. .. ..	A4	...
10758	Acacia aff. aneura	.. .. ..	.. ..	.. .. A3 ..	.. .. ..	.. .. ..	...
10648	Acacia arida	.. .. ..	.. ..	C4 B3 D3 E4	.. .. ..	.. C4 ..	...
10771	Acacia bivenosa	.. .. E2	.. B2	E3 .. .. .. D4 ..	A1	E3 C3 B2	...
10616	Acacia citrinoviridis	E4 .. D3	.. ..	E5 D4 .. B1	D3 E5 E4	D3 A1 ..	...
10623	Acacia coriacea	C1	.. ..	.. ..	D2	.. .. ..	...
10773	Acacia farnesiana	.. .. ..	.. A1	.. ..	.. .. D3	.. .. ..	...
10805	Acacia inaequilatera	.. .. D4	.. C2	.. ..	.. .. ..	E3	...
10729	Acacia kempeana	.. .. ..	.. ..	.. .. E5 ..	.. .. ..	D4	...
10760	Acacia maitlandii	.. .. ..	.. ..	.. .. B1 .. C3 ..	.. .. ..	.. .. ..	...
10707	Acacia marramamba	.. .. ..	.. ..	.. ..	.. .. ..	A3	...
10767	Acacia monticola	.. .. ..	.. ..	C1 .. .. .. B3 ..	.. .. ..	.. .. ..	...
.....	Acacia pruinocarpa	.. .. ..	.. ..	.. A2	.. .. ..	.. .. ..	...
10764	Acacia ptychophylla	.. .. ..	.. ..	.. .. A4 ..	.. .. ..	.. .. ..	...
10607	Acacia pyrifolia	D4	.. ..	C3 C3 B2	A2 C3 ..	.. B1 ..	...
10759	Acacia retivenia	.. .. ..	.. ..	.. .. A4 ..	.. .. ..	.. .. ..	...
10705	Acacia sclerosperma	.. .. ..	.. ..	.. ..	.. .. D4	.. .. ..	...
.....	Acacia stronglophylla	.. .. ..	.. ..	.. ..	A2	.. A1 ..	...
10762	Acacia tetragonophylla	.. .. ..	.. ..	B1 .. .. .. B3 ..	.. .. ..	B2	...
10761	Acacia tumida	.. .. ..	.. ..	.. .. A4 ..	.. .. ..	.. .. ..	...
10703	Acacia victoriae	C2 .. E3	.. ..	B3 .. .. .. B1 ..	.. .. E5	D3 B1 ..	...
.....	Acacia xiphophylla	E5 .. C2	C3 B1	.. D4 D3 B2	.. .. ..	D3 B4 D3	...
.....	Neptunia diamorphantha	.. .. ..	.. ..	.. ..	A1	.. .. ..	...
MOLLUGININACEAE							
10608	Mollugo molluginis	.. B2 ..	.. ..	B2 .. .. B1	.. .. ..	B2	...
MORACEAE							
10806	Ficus opposita var. micracantha	.. .. ..	.. ..	.. .. A1	.. .. ..	.. .. ..	...
10784	Ficus platypoda	.. .. ..	.. B1	.. B2 .. .. .. A1	.. .. ..	.. A1 ..	...

Coll. No.	Species	BOOLGEED B1 B2 B3	CAPRI C1 C2	NEWMAN N1 N2 N3 N4 N5 N6	RIVER R1 R2 R3	ROBE T1 T2 T3	
MYOPORACEAE							
10793	Eremophila cuneifolia	.. D4 B1	.. ..	.. ..	.. .. ..	B1	...
10654	Eremophila freelingii	.. .. ..	.. ..	.. .. B4 ..	.. .. ..	.. .. ..	...
10657	Eremophila latrobeii	.. .. ..	.. ..	.. .. A1 ..	.. .. ..	A1	...
10694	Eremophila latrobeii ssp. glabra	.. .. ..	D3 ..	.. C3 B2 B2 .. B3	.. .. ..	.. .. ..	...
10594	Eremophila latrobeii ssp latrobeii	A1	.. ..	.. ..	.. .. ..	.. .. ..	...
10658	Eremophila latrobei ssp. maitlandii	.. .. ..	.. ..	.. .. A1 ..	.. .. ..	.. .. ..	...
10718	Eremophila leucophylla	.. .. ..	.. ..	.. ..	.. .. ..	A2	...
10719	Eremophila longifolia	.. .. ..	.. A1	.. ..	.. .. ..	B1	...
10765	Eremophila exilifolia	.. .. ..	.. ..	.. .. A3 B2	.. .. ..	.. .. ..	...
MYRTACEAE							
.....	Eucalyptus camaldulensis	.. .. ..	.. ..	.. D4	E4	.. .. ..	...
.....	Eucalyptus coolabah	.. .. ..	.. ..	.. ..	C3	.. .. ..	...
10721	Eucalyptus leucophloia Brooker	.. .. ..	E4 ..	E5 B2 E4 E4 A1 ..	.. .. ..	B3 B3 ..	...
.....	Eucalyptus terminalis	.. .. ..	.. ..	.. .. .. B2	.. .. ..	.. .. ..	...
.....	Eucalyptus sp.	.. .. ..	E3 ..	.. ..	.. .. ..	.. .. ..	...
10741	Melaleuca glomerata	.. .. ..	.. ..	.. B3	E4	.. .. ..	...
10622	Melaleuca leucadendra	.. .. ..	.. ..	.. ..	C4	.. .. ..	...
NYCTAGENACEAE							
10632	Commicarpus australis	.. .. ..	.. ..	.. ..	A1	.. .. ..	...
P102.	Boerhavia gardneri	.. .. B3	.. B2	.. ..	.. .. ..	.. .. ..	...
10580	Boerhavia repleta	D2	.. ..	.. ..	B3 B3 ..	.. A2 ..	...
OLEACEAE							
10582	Jasminum lineare	C1	C2 A2	D2 B3	.. B1 ..	B1	...
PAPAVERACEAE							
10681	*Argemone mexicana	D4	.. ..	.. ..	D4	.. .. ..	...
PAPILIONACEAE							
10695	Glycine tabacina	.. .. ..	.. ..	.. .. A1	.. .. ..	.. .. ..	...
10584	Indigofera colutea	B2 .. B4	.. ..	.. ..	.. A3 ..	.. .. ..	...
10722	Indigofera monophylla	D3	.. ..	C3 C2 B1	.. .. C3	A3	...
10745	Psoralea martinii	.. .. ..	.. ..	.. ..	.. .. ..	B2	...
10605	Rhynchosia minima	B2	.. ..	.. B2	.. .. ..	.. .. ..	...
10777	Sesbania cannabina	.. .. ..	.. ..	.. ..	D3	A2	...
10778	Swainsona maccullochiana	.. .. B3	.. ..	.. ..	.. .. ..	B3	...
10585	Tephrosia eriocarpa	C3	.. ..	.. ..	.. .. ..	.. .. ..	...
10602	Tephrosia rosea	B4	.. A2	.. ..	B1	.. .. ..	...
10786	Tephrosia uniovulata	.. .. ..	.. A1	B1 .. .. B1	.. .. ..	.. .. ..	...
P79	? Tephrosia	.. .. ..	.. ..	.. ..	A2	.. .. ..	...
10665	Vigna lanceolata	.. .. ..	.. ..	.. ..	B1	.. .. ..	...
10578	?	D3	.. ..	.. C2 B1	.. C3 ..	.. .. ..	...
POACEAE							
10635	Aristida contorta	.. .. ..	.. ..	.. ..	A1 A2 ..	.. .. ..	...
10689	Aristida exserta	.. .. ..	.. B3	B3 B3 .. .. .. B4	.. .. ..	.. .. ..	...
10740	Brachyachne prostrata	.. E4 ..	.. ..	.. ..	.. .. ..	.. .. ..	...
10682	*Cenchus ciliaris L.	D4 .. B2	.. ..	.. ..	B2 E4 E7	.. .. ..	...
.....	Chloris barbata	.. .. ..	.. ..	.. ..	.. .. ..	.. A2 ..	...
10808	Cymbopogon bombycinus	E2 B1 ..	E2 D2	D2 D3 B1	.. B1 ..	.. B1 B1	...
10734	Dactyloctenum radulans	.. .. ..	.. ..	.. ..	.. A3 ..	.. .. ..	...
10626	Enneapogon caerulescens	.. .. ..	.. B2	.. ..	B2 B2 ..	.. A1 ..	...
10683	Eragrostis dielsii	C3 .. B2	.. ..	.. ..	.. .. ..	.. .. ..	...
.....	Eragrostis elongata	.. .. ..	.. ..	.. ..	.. .. ..	.. A2 ..	...
.....	Eragrostis ? falcatus	.. .. ..	.. ..	.. ..	.. D3 ..	.. .. ..	...
10614	Eragrostis japonica	.. .. ..	.. D3	.. ..	D3	.. .. ..	...
10617	Eriachne benthamii	.. .. ..	.. ..	.. ..	B2	.. .. ..	...
.....	Eriachne dominii	.. .. ..	B1 ..	.. C3 .. B3 B3 ..	.. D4 ..	D3 B3 ..	...
10804	Eriachne festucea	.. .. ..	.. ..	.. ..	.. .. ..	A2	...
10688	Eriachne mucronata	.. .. ..	.. A3	.. .. C4	.. .. ..	.. .. ..	...
10627	Eriachne sp.	C3	.. C3	.. D4 B4 B3	B2	.. B3 B2	...
10800	Paraneurachne muelleri	.. .. ..	.. ..	.. ..	.. .. ..	A2	...
10684	Paspalium clementii	D4	.. ..	.. B3 .. B2	.. C4 ..	.. .. ..	...
10590	Perotis rara	A2	.. ..	.. ..	.. A3 ..	.. .. ..	...
10639	Setaria dielsii	.. .. ..	.. ..	.. ..	D4 E4 ..	.. .. ..	...
.....	Sporobolus australasicus	.. .. ..	.. ..	.. B4	.. D5 ..	.. .. ..	...
10723	Themeda australis	.. .. ..	.. ..	.. B3	.. A2 ..	.. .. ..	...
10591	Tragus australianus	B2	.. ..	.. ..	.. .. ..	.. .. ..	...
.....	Triodia angusta	.. .. ..	.. ..	.. ..	.. .. ..	.. B3 ..	...
.....	Triodia basedowii	E5 .. E5	E5 E5	E5 E5 E5 E5 E5 ..	.. .. ..	E4 E5 E5	...
.....	Triodia pungens	.. B2 ..	E4 ..	.. .. B3	.. E4 ..	E5	...
10710	Triodia sp.	.. .. ..	.. ..	.. ..	.. .. ..	.. .. ..	...
10803	Triodia sp.	.. .. ..	.. ..	.. ..	.. .. ..	D6	...
10809	Triodia sp.	.. .. A3	.. ..	.. ..	.. .. ..	A3	...
10611	?	.. .. ..	.. ..	.. ..	B2	.. .. ..	...

Coll. No.	Species	BOOLGEED B1 B2 B3	CAPRI C1 C2	NEWMAN N1 N2 N3 N4 N5 N6	RIVER R1 R2 R3	ROBE T1 T2 T3	
POLGALACEAE							
10789	Polygala sp.	.. .. ..	.. ..	.. .. .. B1 A2 ..	.. .. ..	.. .. ..	...
PORTULACEAE							
10754	Calandrinia sp..	.. .. A3	.. ..	.. .. .. A2	.. .. B2	B3	...
.....	Portulaca ? oleracea.	.. .. ..	.. ..	.. ..	.. C3 ..	B2 A2 ..	...
POTAMOGETONACEAE							
10668	Potamogeton tricarinatus	.. .. ..	.. ..	.. ..	B3	.. .. ..	...
PROTEACEAE							
10730	Grevillea ?stenobotrya	A1	.. ..	.. .. .. B1	.. A1 ..	.. .. ..	...
10625	Hakea suberea	.. .. ..	.. A1	.. ..	A1 .. C3	C1	...
RUBIACEAE							
10763	Canthium latifolium	.. .. ..	.. ..	.. B2 .. .. A1 ..	.. .. ..	.. .. ..	...
10664	Oldenlandia crouchiana	.. .. ..	.. A1	.. .. B1 A2	B1	.. .. ..	...
10781	Synaptantha tillaeacea	.. .. A1	.. ..	.. ..	.. .. ..	.. .. ..	...
SANTALACEAE							
10719	Santalum lanceolatum	.. .. ..	.. ..	.. .. A1 ..	.. .. B2	A1	...
SCROPHULARIACEAE							
10678	Peplidium maritimum	.. .. ..	.. ..	.. ..	A2	.. .. ..	...
10391	Stemodia viscosa.	.. .. ..	.. ..	.. ..	A1	.. .. ..	...
10652	Striga multiflora	.. .. ..	.. ..	.. ..	.. .. ..	A1	...
SAPINDACEAE							
10655	Dodonaea pachyneura	.. .. ..	.. ..	.. B3 .. .. A1 ..	.. .. ..	.. .. ..	...
10690	Dodonaea petiolaris	.. .. ..	.. ..	.. .. C5	.. .. ..	.. .. ..	...
SOLANACEAE							
10642	Datura leichardtii	.. .. ..	.. ..	.. ..	A2	.. .. ..	...
10604	Nicotiana occidentalis	C3 .. A2	.. B3	.. ..	B3 A2 ..	.. .. A2	...
10700	Nicotiana sp.	.. .. ..	C3 A2	.. B3 .. .. .. B2	.. .. ..	.. .. ..	...
10691	Solanum cleistogamum	A1 A1 B1	B1 ..	.. .. B1 .. .. A1	.. B1 ..	B1 A1 ..	...
10755	Solanum diversiflorum	.. .. ..	.. ..	.. ..	.. .. ..	C2	...
10687	Solanum lasiophyllum	C1 .. B2	B1 B1	.. B1 .. B1	.. C3 ..	B1 B1 ..	...
10680	Solanum sturtianum	A1	.. ..	.. .. B1	A1	.. A1 ..	...
STACKHOUSIACEAE							
10797	Stackhousia intermedia	.. .. ..	.. ..	.. .. .. B2 A2 ..	.. .. ..	.. .. ..	...
STERCULIACEAE							
10785	Brachychiton australe	.. .. ..	.. A1	.. B2 .. .. .. A1	.. .. ..	.. .. ..	...
10587	Waltheria indica	A1	.. ..	.. ..	.. .. ..	.. .. ..	...
SURIANACEAE							
10609	Stylobasium spathulatum	.. .. B2	.. B3	E3 .. C1	.. .. B1	.. .. B1	...
TILIACEAE							
10586	Corchorus walcottii	E3 .. D2	.. E3	.. D4 D3	B1 D3 ..	C1 B1 ..	...
10726	Triumfetta leptacantha	.. .. ..	.. ..	.. ..	.. .. ..	B2	...
10770	Triumfetta micracantha	.. .. ..	.. ..	.. .. A2 B2	.. .. ..	.. .. ..	...
TYPHACEAE							
.....	Typha domingensis Pers.	.. .. ..	.. ..	.. ..	A2	.. .. ..	...
URTICACEAE							
10699	Parietaria debilis	.. .. ..	.. B3	.. .. C2	.. .. ..	.. .. ..	...
VERBANACEAE							
10782	Clerodendron lanceolatum	.. .. ..	.. A1	.. A3	.. .. ..	.. .. ..	...
VIOLACEAE							
9883	Hybanthus enneaspermus	B1	.. ..	.. ..	.. B3 ..	.. .. A1	...
ZYGOPHYLLACEAE							
10748	Tribulus hirsutus	.. .. ..	.. ..	.. ..	.. .. ..	.. B2 ..	...
10714	Tribulus macrocarpus	.. .. ..	.. ..	.. ..	.. .. ..	A1	...
10775	Tribulus platypterus	.. .. ..	.. ..	.. B1 .. C1	.. B1 ..	C2 C1 B1	...
10592	Tribulus sp.	.. .. A2	.. ..	.. ..	.. A2 ..	.. .. ..	...
10802	Zygophyllum ovatum	.. .. A3	.. ..	.. ..	.. .. ..	A3	...
NOT DETERMINED							
10735	?	.. .. ..	.. ..	.. ..	.. B2 ..	.. .. ..	...
10810	?	.. .. ..	.. ..	.. A1	.. .. ..	.. .. ..	...

REFERENCES

BEARD, J S (1975) - Vegetation survey of Western Australia, Pilbara. University of Western Australia Press.

DANIELS, J L and HALIGAN, R (1968) - Geological survey of Western Australia "Wyloo" , first edition. Bureau of Mineral Resources, Geology and Geophysics, Dept. National Development, Canberra.

MUIR, B G (1977) - Biological survey of the Western Australian Wheatbelt. Part 2: Vegetation and Habitat of Bendering Reserve. Records of the Western Australian Museum, Supplement 3.

PAYNE, A L, MITCHELL, A A and HOLMAN, W F (1982) - An inventory and condition survey of rangelands in the Ashburton River Catchment, Western Australia. Dept. of Agriculture, Western Australia.Technical Bulletin No. 62.