

## II. VEGETATION: TARIN ROCK AND NORTH TARIN ROCK RESERVES

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### General

The Reserves fall within the Avon district of the South-western Botanical Province of Gardner and Bennets (1956), and the vegetation conforms to that generally found throughout this region.

No documented plant collections have been made. The only information on habitat available before the 1972 burn on Tarin Rock Reserve was taken by Kitchener *et al.* (pers. comm.) during the first (May 1971) faunal survey by the Western Australian Museum. The classification of vegetation and habitat used was later found to be unsuitable for relation to fauna, and led to the present study.

The following observations collected during the 1967 survey by Fisheries and Fauna officers (see introduction) are of some interest:

1. The only toxic plants recorded on the Reserves by local farmers were Box Poison (*Oxylobium parviflorum*) and Prickly Poison (*Gastrolobium spinosum*). Both were considered uncommon on the Reserve and of little consequence.
2. "Introduced 'weeds' were not known on the Reserve and were indeed rare in the district".
3. Local farmers indicated that it was at least 17 years since the Reserve had been burnt (i.e. around 1950) for the last burn; this corresponds well with the estimate of 12–15 years before the air photographs of 1964 — see introduction.
4. Farmers observed that 6–7 years was needed to allow regeneration after fire to produce anything like the original vegetation.

### Methodology

The vegetation of Tarin Rock and North Tarin Rock Reserves was mapped at Level 2 of the reliability scale set out in Muir (1976). That is, each basic vegetation formation discernible on the air photographs was examined on the ground; this information was then extrapolated to adjacent formations.

Uncleared land contiguous to the Reserve but not included within it was mapped at formation level directly from the photographs (Level 3).

Level 2 locations shown on the accompanying vegetation map represent 'sample areas' where the vegetation was determined. The following prefix numbers of the locations represent basic formation types.

1. = woodland formations.
2. = mallee formations
3. = tall shrub formations
4. = heath formations



Plate 1. Sparse mallee-heath of the form typical of a large portion of the vegetation of both Tarin Rock and North Tarin Rock Reserves. Note Compass Bush, *Casuarina pinaster*, to left of observer.

- 5. = lithic complexes
- 6. = breakaway complexes.

Only types 1 and 2 are found on Tarin Rock Reserve. All types except type 5 are found on North Tarin Rock Reserve.

Level 3 locations shown on the map are prefixed by:

- W = woodland formations
- M = mallee formations.

The methods used in classifying formations, coding habitats, preparing plant lists, classifying litter and describing soils are those of Muir (1976).

Locations are illustrated on **Maps 1 and 2.**

## VEGETATION DESCRIPTIONS

### WOODLAND FORMATIONS:— TARIN ROCK RESERVE

All descriptions prior to the 1972 burn are from Kitchener (pers. comm.)

#### §Loc. 1.1 Before 1972 burn (Trapline 9)

Code eMc.nScR/FSL.

*Eucalyptus gardneri* and *E. falcata* trees. Stratum falls within 10—30 m tall category of Specht (1974).

Lower stratum of *Spyridium denticuliferum*. Shrubs 1 m tall, < 10% canopy cover.

Litter

Moderately dense

Soil

Yellowish red, fine sandy loam containing *ca* 30% gravel pebbles.

#### §Loc. 1.1. After 1972 burn (September 1975)

Key Description

Low forest A over dwarf scrub D on fine sandy loam.

Code eLAc.xSDi/FSL.

Loc. Details

Stratum 1. *Eucalyptus gardneri*, *E. falcata* and occasional *E. salmonophloia* trees. Both species mature, stratum 5—7 m tall, with scattered *E. salmonophloia* to 10 m tall. 30—70% canopy cover at sample point.

Stratum 2. *Acacia celastrifolia*, *Hibbertia enervia*, *Synaphaea petiolaris* and *Goodenia scapigera* shrubs. Several other species present.

All species very immature, stratum 0—0.5 m tall; 10—30% canopy cover at sample point.

## Comments

This small patch of woodland was burnt out in February 1972. There is no evidence of weeds, grasses, or human usage at the present time, although there may be old stumps which indicate timber cutting.

## Litter

None

## Soil

Described by Kitchener (pers. comm.) as a yellowish red (5 YR) fine sandy loam containing *ca* 30% lateritic pebbles.

## §Loc. 1.2 (Traplines 2,11)

### Key Description

Low woodland A over scrub over open dwarf scrub D on fine sandy loam.

Code eLAi.xSi.xSDr/FSL.

### Loc. Details

Stratum 1. *Eucalyptus gardneri* and *E. falcata* trees. Both species mature, stratum 10–12 m tall; 10–30% canopy cover at sample point.

Stratum 2. *Casuarina acutivalvis* and *Hakea multilineata* shrubs. Both species senescent, stratum 2–4 m tall; 10–30% canopy cover at sample point.

Stratum 3. *Platysace maxwellii*, *Hakea lissocarpha*, *Gastrolobium spinosum*, *Phebalium filifolium* and *Hibbertia enervia* shrubs. All species immature, stratum 0–0.5 m tall; *ca* 2% canopy cover at sample point.

## Comments

There is no evidence of fire within *ca* 10 years of the 1964 series of air photos, therefore the association is at least 20 years old. The area has been cut over to a small extent for timber, and a nearby area is currently used as a rubbish tip.

## Litter

Abundant, mostly broad leaves and twigs, with a small amount of large debris. The litter is fairly evenly distributed, but with some clumping beneath vegetation. Clumps never exceed *ca* 0.9 m apart.

## Soil

Depth *ca* 20 cm friable soil overlying compact laterite.

0–1 cm — soil plus organic dust.

2–19 cm non-pedal, earthy, coherent, unbleached, non-calcareous, pH 6.3, strong brown, 7.5 YR 5/6, fine sandy loam containing < 60% ferruginous pebbles from 2 mm to 30 mm diameter; sand grains are quartz and laterite fragments, mostly subangular, grains below 0.5 mm diameter well sorted; plant roots present.



20 cm onwards — the gravelly B horizon comprises the same soil as a matrix between the pebbles, which make up < 90% of the horizon.

#### Comments

Soil reaction trend — acid, well drained, located on gentle sloping upper regions of a slight crest. Northcote classification of friable soil Uc 1.42.

#### §Loc. 1.3 (Trapline 13)

#### Key Description

Woodland *over* open low scrub A *over* open dwarf scrub D on fine sandy clay loam.

Code wMi.mSAr.xSDr/FSCL.

#### Loc. Details

Stratum 1. *Eucalyptus occidentalis* trees. Scattered *eucalyptus loxophleba gratiae* mallee, particularly around edge of stand. Trees were mature to senescent, stratum 15—18 m tall, 10—30% canopy cover at sample point.

Stratum 2. *Melaleuca uncinata*, *M. adnata* shrubs. Both species mature, stratum 1—2 m tall; < 10% canopy cover at sample point.

Stratum 3. *Acacia subglauca*, *Exocarpus aphyllus* and *Olearia muelleri* shrubs.

All species mature to senescent, stratum 0—0.5 m tall; < 10% canopy cover at sample point.

#### Comments

Although situated in a burn pattern 15 to 20 years old it is most likely the association has been unburnt for a much longer period due to its open nature. No evidence of burning, seed regeneration or weeds. Occasional grasses present. Timber has been removed from the area.

#### Litter

Abundant, including large debris — 3 cm deep, clumps 0.5 m apart.

#### Soil

ca 30 cm friable soil overlying clays.

0—3 cm soil plus organic dust.

4—28 cm highly pedal, earthy, strongly coherent, blotchy bleached, non-calcareous, pH 6.4, yellowish red, 5 YR 4/6, fine sandy clay loam. Sand grains are quartz, subangular to subrounded, poorly sorted; plant roots present.

31 cm onwards yellowish red, 5 YR 4/6, light clay. pH 6.4

#### Comments

Soil reaction trend — acid: poorly drained. Soil lies in depression between two adjacent gentle sloping hillsides, at the base of a breakaway. Northcote classification Um 3.21.

#### §Loc. 1.4 Before 1972 burn

as for loc. 1.1 pre-burn description.

#### §Loc. 1.4 After 1972 burn (September 1975)

as for loc. 1.1 September 1975.

#### §Loc. 1.5 (Trapline 1)

##### Key Description

Open woodland on light clay.

Code eMr/LC

##### Loc. Details

Stratum 1. *Eucalyptus occidentalis* trees. Mature to senescent, stratum 18–22 m tall, < 10% canopy cover at sample point.

Although no other strata present, there are occasional scattered mallees to 4 m tall and occasional shrubs such as *Melaleuca adnata*, *Acacia acuaria*, *Choretrum* sp. and *Alyogyne hakeifolia*.

##### Comments

The open nature of the woodland assured its survival, although surrounded by the 1972 fire. This has probably been the case in past years also, and the association may be of considerable age. Some trees reach 160 cm in circumference at breast height.

##### Litter

Almost continuous, comprising broad leaves, twigs and considerable amounts of large debris including logs. Clumping around tree bases and amongst fallen branches to 10 cm deep. Clumps 0.5 — 3 m apart.

##### Soil

ca 10 cm friable soil overlying dense clays.

0–2 cm soil plus organic dust.

3–10 cm highly pedal, earthy, strongly coherent, unbleached, non-calcareous, pH 6.5, dark brown, 7.5 YR 4/4, light clay. Predominantly clay with a few subrounded to rounded quartz grains < 0.2 mm in diameter; plant roots present.

11 cm onwards for 3–10 cm zone, but has the texture of a light medium clay.

##### Comments

Soil reaction trend — neutral; drainage poor, the area being situated in a shallow depression surrounded by gentle sloping hillsides. Northcote classification Uf 1.43.

#### §Loc. 1.6

Similar to loc. 1.5 with scattered *E. salmonophloia*.

**§Loc. 1.7**

As for loc. 1.6.

**§Loc. 1.8 Before 1972 burn (Trapline 6)**

Code eLAd/SL

*Eucalyptus gardneri* trees. Mature, stratum 5—15 m tall, 70—100% canopy cover.

Virtually no lower strata except occasional *Hakea subsulcata* and *Spyridium denticuliferum* shrubs.

Litter

Virtually absent.

Soil

Light yellowish brown, 10 YR 6/4, sandy loam with < 60% laterite pebbles.

**§Loc. 1.8 After 1972 burn (September 1975)**

As for loc. 2.18 with remains of trees replacing mallees.

**§Loc. 1.9 Before 1972 burn (Trapline 7)**

Code eLBd/FSL

*Eucalyptus flocktoniae* trees. Stratum upper limit about 5 m tall, 70—100% canopy cover.

No lower strata present.

Litter

Abundant

Soil

Yellowish red fine sandy loam containing *ca* 30% laterite pebbles.

**§Loc. 1.9 After 1972 burn (September 1975)**

As loc. 1.1 understory.

**MALLEE FORMATIONS: TARIN ROCK RESERVE**

**§Loc. 2.1**

as loc. 2.19

**§Loc. 2.2**

as loc. 2.6 and 2.19 as vague, indefinable mosaic, varying with minor changes in soil depth.

**§Loc. 2.3**

as loc. 2.19

§Loc. 2.4 Before 1972 burn

as for loc. 2.11

§Loc. 2.4 After 1972 burn (September 1975)

as for loc. 2.18

§Loc. 2.5

Key Description

Very open shrub mallee *over* heath *on* clay loam.

Code eKSr.xSBc/CL

Loc. Details

Stratum 1. *Eucalyptus albida* shrub mallee. Mature, stratum 2—3 m tall, < 10% canopy cover at sample point.

Stratum 2. *Casuarina acutivalvis*, *Dryandra* affin *cirsioides*, *Gastrobium spinosum*, *Melaleuca* affin *scabra*, *Isopogon teretifolius* shrubs.

All species immature, approaching maturity, stratum 0—1.5 m, 30—70% canopy cover at sample point.

Comments

The 1964 air photographs show a burn pattern, probably about five years old, and the vegetation at the time of this survey is therefore probably about 15 years old. There is no obvious evidence of fire, and no obvious signs of regeneration from seed or lignotuber. Weeds and grasses are absent, there is no evidence of human usage or grazing.

Litter

Sparse, evenly distributed over ground.

Soil

ca 10 cm of friable soil in fissures within, and overlaying dense compact laterite.

0—0.5 cm soil plus traces of organic dust.

0.5—9 cm non-pedal, earthy, coherent, unbleached, non-calcareous, pH 6.2, brownish yellow, 10 YR 6/8, clay loam containing ca 60% irregular to spherical lateritic pebbles from 2 mm to 25 mm in diameter. Sand grains are quartz and laterite fragments, mostly angular to subangular, moderately well sorted: plant roots present.

11 cm onwards hard, compact lateritic pebbles with traces of matrix soil of the type described in the 0.5—9 cm horizon.

Comments

Soil reaction trend — acid, well drained with some local pooling in depressions. Situated on upper slope of gently undulating hill. Northcote classification of friable soil Uc 1.42.



**§Loc. 2.6 (see note loc. 4.1) (Trapline 15)**

**Key Description**

Very open shrub mallee over heath A on laterite

Code eKSr.xSAc/K

**Loc. Details**

Stratum 1. *Eucalyptus albida* shrub mallee.

Mature, stratum 2—3 m tall, ca 2% canopy cover at sample point.

Stratum 2. Unstratified shrubs with no conspicuous dominants. Common species are however, *Banksia sphaerocarpa*, *Dryandra* affin *cirsioides*, *Hakea incrassata*, *Isopogon teretifolius*, and *Petrophile seminuda* shrubs.

Stratum 0—2 m tall, 30—70% canopy cover at sample point.

Occasional mallees occur over the heath.

**Comments**

The 1964 air photographs show a burn pattern probably about five years old, thus the vegetation at the time of this survey is probably about 15 years old. There is no evidence of fire, and no obvious signs of regeneration. Weeds and grasses are absent; there is no evidence of human usage or grazing.

**Litter**

Sparse, with some clumping to 0.5 cm deep beneath vegetation. Clumps are ca 1.5 m apart.

**Soil**

Virtually absent. Bare rock surface is exposed, the plants gaining rootholds in crevices in the rock surface. The soil, where present, occupies these crevices. Insufficient soil could be extracted to examine it, but in appearance it resembles the soil described in Loc. 2.5, 0.5 — 9 cm horizon.

**Comments**

Surface run-off no doubt accounts for most of the water which falls on the rock, the only supply to the plants being from deep soil water arising within the crevices and from temporary rain soakage into these soil pockets. Situated near crest of very low hill.

**§Loc. 2.7**

as loc. 2.19

**§Loc. 2.8**

as loc. 2.2

**§Loc. 2.9**

as loc. 2.2

**§Loc. 2.10**

as loc. 2.18

## §Loc. 2.11 (Trapline 12)

### Key Description

Very open shrub mallee *over* low scrub B *over* open dwarf scrub D on clayey sand.

Code eKSr.xSBi.xSDi/CLS

### Loc. Details

Stratum 1. *Eucalyptus incrassata* and *E. albida* shrub mallees and scattered *Actinostrobos arenarius* trees.

All species immature, stratum 2.4 m tall, < 10% canopy cover at sample point.

Stratum 2. *Petrophile ericifolia*, *Eremaea pauciflora*, *Hakea falcata* and *Banksia baueri* shrubs.

All species immature, stratum 1—1.5 m tall, 10—30% canopy cover at sample point.

Stratum 3. *Dryandra pteridifolia*, *D. nivea* and *Melaleuca affinis scabra* shrubs.

Several other species present.

All species immature, stratum 0—0.5 m tall, < 10% canopy cover at sample point.

### Comments

As loc. 2.5, therefore probably about 15 years old. No evidence of regeneration, weeds, human utilisation or grazing.

Occasional grass present, genus and species indeterminate.

### Litter

Moderately abundant, mostly terete leaves, broad leaves, bark and twigs, clumped beneath vegetation to *ca* 3 cm deep; clumps *ca* 2 m apart.

### Soil

Friable soil greater than 1 m deep

0—2 cm soil plus organic dust.

2cm onwards non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.5, very pale brown, 10 YR 7/4, clayey sand. Sand grains are quartz, poorly sorted, the larger grains (0.5—1 mm) being subangular to subrounded, the smaller (0.1—0.5 mm) being subrounded to rounded; plant roots present.

### Comments

Soil reaction trend — neutral, soil excessively well drained. Situated in depression between two adjacent gently sloping hillsides. Northcote classification Uc 1.4.

## §Loc. 2.12

as loc. 2.2

§Loc. 2.13

as loc. 2.18

§Loc. 2.14 Before 1972 burn (Trapline 10)

(Adapted from Kitchener, pers. comm.)

Key Description

Very open shrub mallee *over* dense low heath C *over* low sedges on sandy loam.

Code eKSr.xSCd.nVLc/SL

Loc. Details

Stratum 1. *Eucalyptus eremophila* and *E. flocktoniae* shrub mallee. Stratum 3 m tall, < 10% canopy cover at sample point.

Stratum 2. *Beaufortia bracteosa*, *Hakea lissocarpa*, *H. crassifolium* *H. subsulcata*, *Isopogon teretifolius*, *Choretrum glomeratum*, *Gastrolobium spinosum*, *Spryridium denticuliferum* shrubs. Stratum 1 m tall, 70–100% canopy cover at sample point.

Stratum 3. *Lepidosperma brunonianum* sedge and occasional *Astroloma* sp. shrubs. Height not specified, 30–70% canopy cover at sample point.

Comments

This location is situated near the peak of Tarin Rock, and comprises scattered shrubs and mallees which grow opportunistically in crevices and slight depressions on the bare rock. All identifications for the above description were supplied by the W.A. Herbarium from specimens collected by Kitchener *et al.*

Litter

Sparse.

Soil

Yellowish brown sandy loam over strong brown sandy clay loam, the latter forming a matrix between laterite pebbles which constitute *ca* 60% of the soil.

§Loc. 2.14 After 1972 burn (September 1975)

One or possibly two mallees present, regrown to about 1 m tall, but neither has as yet flowered. Numerous small shrubby species present, the most conspicuous being *Acacia celastrifolia*, *Hibbertia enervia*, *Synaphaea petiolaris* and *Goodenia scapigera*. The understory regrowth had a canopy cover of 10–30% at the time of examination.

§Loc. 2.15

As for loc. 2.17 but mallee slightly denser although still within the 10–30% range.

**§Loc. 2.16 Before 1972 burn (Traplines 3,5)**

Key Description

Very open shrub mallee *over* low heath C on loam (texture unspecified).

Code eKSr.xSCc/LOAM

Loc. Details

Stratum 1. *Eucalyptus eremophila* and scattered *E. albida* shrub mallee to 4 m tall. < 10% canopy cover.

Stratum 2. *Isopogon teretifolius*, *Leucopogon* sp. *Gastrolobium spinosum*, *Petrophile squamata*, *Melaleuca pungens*, *Petrophile seminuda*, *Casuarina humilis*, *Daviesia uniflora*, and *Hakea falcata* shrubs to 1 m tall, 30—70% canopy cover.

Comments

Identification by W.A. Herbarium from specimens collected by Kitchener *et al.*

Litter

Absent

Soil

Loams (texture unspecified) to 30 cm deep and containing lateritic pebbles.

**§Loc. 2.16 After 1972 burn (September 1975)**

As for loc. 2.18 with patches of loc. 2.17 in shallow depressions.

**§Loc. 2.17 Before 1972 burn**

Kitchener did not record the mallee stratum, and this has been omitted from the key description (**Trapline 4**)

Key Description

Dense thicket *over* shrubs (density unspecified) no soil described.

Code eKS?.m<sub>1</sub>Sd.m<sub>2</sub>SD?/?

m<sub>1</sub> = *Melaleuca uncinata*

m<sub>2</sub> = *Melaleuca* sp.

Loc. Details

Stratum 1. Mallee shrubs — density and height unspecified.

Stratum 2. *Melaleuca uncinata* shrubs. Stratum 3 m tall, 70—100% canopy cover at sample point.

Stratum 3. *Melaleuca* sp. shrubs. Stratum 0.5 m tall — density unknown.

Litter

Absent

## Soil

Unrecorded

### §Loc. 2.17 After 1972 burn (September 1975)

Present description basically as for location 2.18 September 1975, but mallee regrowth is *ca* 2 m tall, and 10–30% canopy cover at sample point (about 15%). Mallee species indeterminate but probably *E. albida* and *E. incrassata*.

Lower stratum is as for loc. 2.18 but contains prominent Restionaceae, *Lepidosperma brunonianum*, *Cryptandra* (possibly *pungens*) and several other species including *Melaleuca uncinata*, *Hakea ambigua*, *Dampiera dura*, *Grevillea* affin *pritzellii* and *Mesomelaena tetragona*, Flowering *Laxmannia* sp. were conspicuous.

This location lies in a narrow depressed area forming a shallow gully between adjacent low hills covered with vegetation similar to loc. 2.18. Soil is same as loc. 2.18.

### §Loc. 2.18 Eight months after 1972 burn (Trapline 16)

This location was not described prior to the 1972 burn, as it was not trapped during the mammal survey at that time.

The first trapping program at this point was in October 1972, following a very dry winter. As a result, regeneration was minimal at that time and has been described, Dell *et al.* (pers. comm.) as being almost totally desolate except for the mallees, which had only a few centimeters of regrowth, the *Xanthorrhoea nana* which were flowering and had new leaves about 10–20 cm long, and scattered seedlings mostly less than 10 cm tall. Early regrowth genera such as *Dampiera* were prominent amongst these seedlings.

### §Loc. 2.18 Three years and seven months after 1972 burn (September 1975)

#### Key Description

Very open shrub mallee *over* dwarf scrub D on sandy loam.

Code eKSr.xSDi/SL

#### Loc. Details

Stratum 1. *Eucalyptus* species, probably *E. albida* and *E. incrassata* shrub mallees. Consist of regrown shoots and young stems up to 1.5 m high. No evidence of flowering. < 10% canopy cover at sample point.

Stratum 2. Shrubs — no conspicuous dominants. Common species are *Conospermum amoenum* var. *croninae*, *Lechenaultia biloba* and *Dryandra ferruginea*. Several other species present. All species very immature, most with no woody tissues developed.

Stratum 0.5 m tall, *ca* 10% canopy cover at sample point.

## Comments

Area burnt in February 1972 by an extremely hot fire which destroyed all vegetation down to ground level. The plants present at the time of this survey, three-and-a-half years later, have regenerated from seed or by lignotuber since the fire.

## Litter

None present.

## Soil

ca 30 cm friable soil overlying compact laterite.  
0—30cm non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.2, light yellowish brown, 10 YR 6/4, sandy loam with < 60% ferruginous irregular and spherical laterite pebbles 3 mm to 25 mm in diameter. Sand is quartz, subangular to subrounded, poorly sorted; plant roots present. 30 cm onwards passes rapidly into compact laterite.

## Comments

Soil reaction trend — acid; excessively well drained. Located on fairly flat country, below low, gently undulating hill slopes. Northcote classification Ucl.41.

## §Loc. 2.19 (Trapline 14)

### Key Description

Open shrub mallee *over* open low scrub A *over* open dwarf scrub C on loam, fine sandy.

Code eKSi.xSAr.xSCr/Lfsy.

### Loc. Details

Stratum 1. *Eucalyptus falcata*, *E. eremophila* shrub mallee. Both species mature, stratum 4—6 m tall, 10—30% canopy cover at sample point.

Stratum 2. *Melaleuca uncinata* and *Choretrum glomeratum* shrubs, both species mature, stratum 1.5—2 m tall < 10% canopy cover at sample point.

Stratum 3. *Phebalium filifolium*, *Hakea subsulcata* and *Melaleuca affinis scabra* shrubs, stratum 0.5—1 m tall, < 10% canopy cover at sample point.

## Comments

No evidence of fire, or regeneration from seed. No grasses or weeds present, does not appear to have been grazed or in any way exploited.

## Litter

Moderately abundant, mostly broad leaves, terete leaves, and twigs, clumped beneath vegetation to ca 2 cm deep. Clumps ca 1 m apart.

## Soil

Friable soil 35 cm deep.  
0—35 cm non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.2,



strong brown, 7.5 YR 5/6, loam, fine sandy; containing < 30% gravel pebbles 4 mm to 15 mm diameter. Sand grains quartz, subrounded to rounded, fairly well sorted; plant roots present.

#### Comments

Soil reaction trend — acid, well drained, situated along shallow watercourse. Northcote classification of friable soil Uml.42.

#### §Loc. 2.20

as loc. 2.2

#### §Loc. 2.21

as loc. 2.26

#### §Loc. 2.22

Burnt in 1972 and showing regrowth species as noted in Loc. 2.18 (and appendix). Original vegetation not discernible, but probably a tall heath with scattered mallee similar to those found on sandy areas of North Tarin Rock Reserve (see this report). Burnt, dead *Casuarina pinaster* and *Hakea incrassata* are conspicuous amongst the debris.

#### §Loc. 2.23

Basically as for loc. 2.22 but with occasional scattered *Nuytsia floribunda* trees to 4 m. All have regenerated foliage on the burnt out trunks.

#### §Loc. 2.24

as loc. 2.18

#### §Loc. 2.25

as loc. 2.2

#### §Loc. 2.26

as loc. 2.11

#### §Loc. 2.27

as loc. 2.11

#### §Loc. 2.28

as loc. 2.11

#### §Loc. 2.29

as loc. 2.2. Mallees become slightly denser to the south. Heathy on northern edges.

#### §Loc. 2.30

as loc. 2.18

#### §Loc. 2.31

as loc. 2.29

**§Loc. 2.32**

as loc. 2.2.

**§Loc. 2.33**

as loc. 2.18

**§Loc. 2.34**

as loc. 2.6

**§Loc. 2.35. Before 1972 burn (Trapline 8)**

**Key Description**

Very open shrub mallee *over* open low scrub A *over* open dwarf scrub D on fine sandy loam.

Code eKSr.n<sub>1</sub>SAr.n<sub>2</sub>SDr/FSL.

n<sub>1</sub> = *Melaleuca cardiophylla*

n<sub>2</sub> = *Cryptandra glabriflora*

**Loc. Details**

Stratum 1. *Eucalyptus albida* shrub mallee, 2—3 tall, scattered.

Stratum 2. *Melaleuca cardiophylla* shrubs dominant, 1.5 m tall < 10% canopy cover at sample point.

Stratum 3. *Cryptandra grabriflora* shrubs dominant, 0.5 m tall, < 10% canopy cover at sample point.

**Litter**

Absent

**Soil**

Reddish brown, fine sandy loam containing < 5% gravel pebbles.

**§Loc. 2.35 After 1972 burn (September 1975)**

as for loc. 2.14

**§Loc. 4.1 See loc. 2.6**

Mallees are in scattered clumps, and the association is effectively a heath.

**VEGETATION OF AREAS OUTSIDE RESERVE**

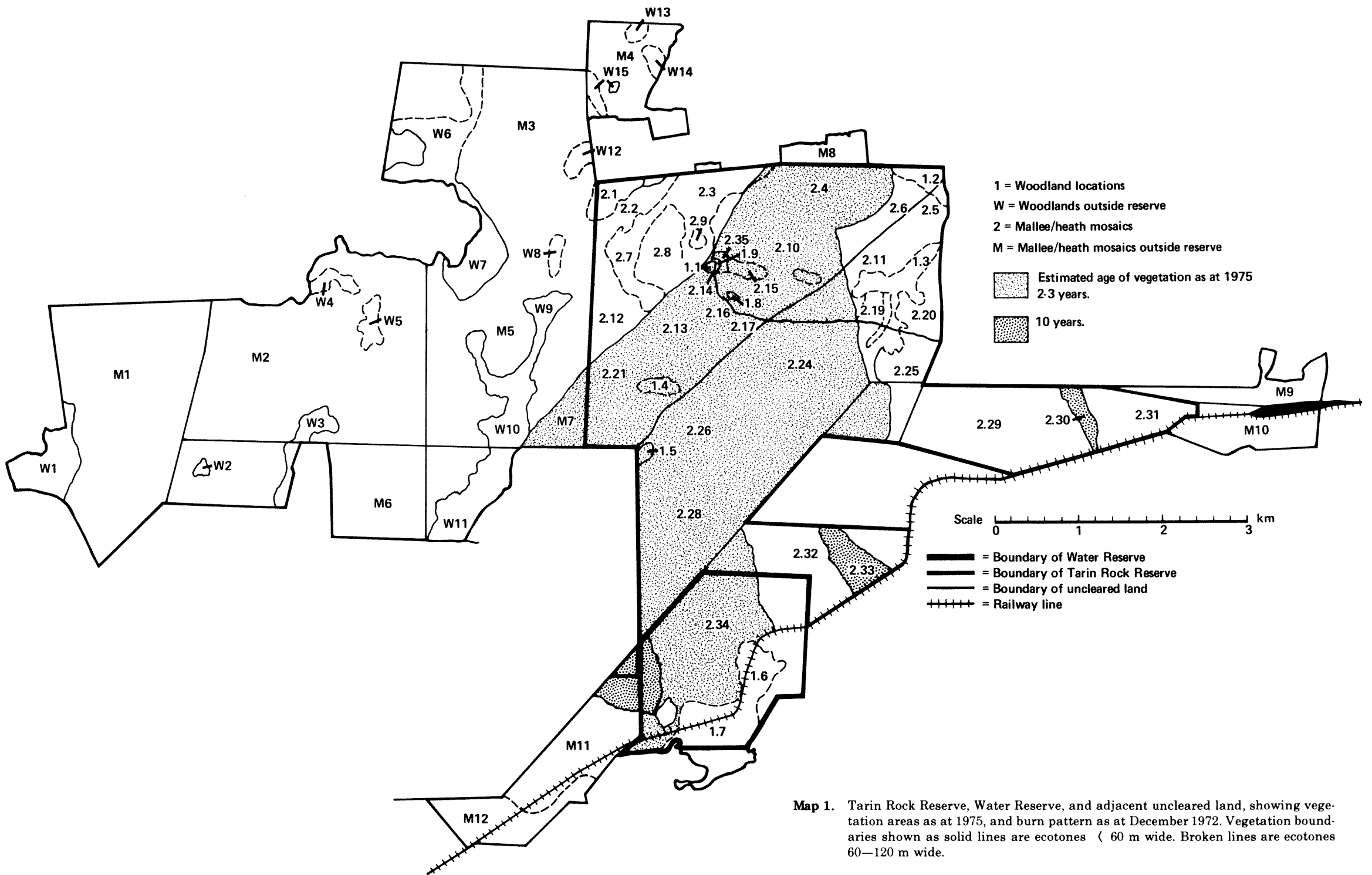
**Woodlands**

W1 Probably similar to loc. 1.6 and 1.7

W2 Probably as loc. 1.1.

W3 Probably *E. wandoo* woodland, fairly open.

W4 Probably *E. occidentalis* or *E. falcata* type woodland.



**Map 1.** Tarin Rock Reserve, Water Reserve, and adjacent uncleared land, showing vegetation areas as at 1975, and burn pattern as at December 1972. Vegetation boundaries shown as solid lines are ecotones < 60 m wide. Broken lines are ecotones 60–120 m wide.

- W5 as loc. W4.  
 W6 Probably as loc. 1.6 and 1.7.  
 W7 as loc. W6.  
 W8 as loc. W6.  
 W9 *E. wandoo* woodland, fairly open.  
 W10 as W9 (Dell pers. comm.)  
 W11 as W10.  
 W12 possibly as W9.  
 W13, 14, 15 possibly *E. occidentalis* woodland.

**Mallee**

- M1 Probably similar to loc. 2.19 or 2.5.  
 M2 as M1.  
 M3 as M1.  
 M4 as M1.  
 M5 as M1.  
 M6 as M1.  
 M7 burnt out, probably as loc. 2.11.  
 M8 as M1  
 M9 as M1  
 M10 as M1.  
 M11 as M1.  
 M12 probably as loc. 2.19

WOODLAND FORMATIONS: NORTH TARIN ROCK RESERVE

§Loc. 1.1. (Trapline 6)

Key Description

Low forest A on fine sandy loam.

Code eLAc/FSL

Loc. Details

*Eucalyptus flocktoniae* trees. All mature, but not senescent, stratum 7—9  
 m tall, 30—70% canopy cover at sample point.

No understory present.

## Comments

No evidence of fire, weeds, grasses, grazing or human utilisation.

## Litter

Moderately abundant, mostly broad leaves, bark, twigs and large debris.

## Soil

Strong brown, fine sandy loam.

## §Loc. 1.2 (Trapline 8)

### Key Description

Open woodland over open dwarf scrub D on fine sandy clay loam.

Code eMr.nSDr/FSCL  
n = *Grevillea heugelii* and *Olearia muelleri*

### Loc. Details

Stratum 1. *Eucalyptus salmonophloia* trees, immature, stratum 18–22 m tall, < 10% canopy cover at sample point.

Stratum 2. *Olearia muelleri*, and *Grevillea heugelii* shrubs.

Both species mature, stratum 0–0.5 m tall, < 10% canopy cover at sample point.

### Comments

Between strata 1 and 2 are scattered (< 1%) *Santalum acuminatum* trees, *Melaleuca lateriflora* shrubs and *Eucalyptus redunca* mallee. The *Santalum* are 1–4 m tall, the *Melaleuca* 1–2 m tall and the mallee, 4–6 m tall. As their canopy cover is so low, and their height so variable, they do not form a distinct stratum, and are therefore excluded from the classification.

There is no evidence of fire, weeds, grasses or grazing, but timber has been removed, as old stumps about fence post diameter are present. There is evidence of post cutting within 1 or 2 weeks of this survey, as newly felled trees with freshly dead leaves were present.

### Litter

Abundant, piled beneath trees and around bushes. Mostly large debris, with some broad leaves, twigs and bark. Piles to 10 cm deep, and 0–4 m apart.

### Soil

ca 12 cm friable soil overlying compact clays.

0–2 cm soil plus organic dust.

3–10 cm highly pedal, earthy, strongly coherent, unbleached, non-calcareous, pH 6.5, light brown, 7.5 YR 6/4, fine sandy clay loam. Sand grains are quartz, subangular to subrounded, < 0.2 mm diameter, well sorted; plant roots present.

12 cm onwards as above but texture is sandy clay.

#### Comments

Soil reaction trend — neutral; drainage poor; in watercourse, evidence of localised pooling. Northcote classification Um 1.41.

### MALLEE FORMATIONS: NORTH TARIN ROCK RESERVE

#### §Loc. 2.1

as loc. 2.5

#### §Loc. 2.2

as loc. 2.5

#### §Loc. 2.3

as loc. 2.14

#### §Loc. 2.4

as loc. 2.5

#### §Loc. 2.5 (Traplines 3, 4)

#### Key Description

Very open shrub mallee *over* low scrub A *over* dwarf scrub D *on* sandy clay loam.

Code eKSr.xSAi.xSDi/SCL.

#### Loc. Details

Stratum 1. *Eucalyptus albida* and *E. decipiens* shrub mallee.

Both species mature, approaching senescence. Stratum 4—6 m tall, *ca* 2% canopy cover at sample point.

Stratum 2. *Hakea falcata*, *H. incrassata*, *Casuarina pinaster* and *Melaleuca seriata* shrubs. Numerous other species present. All species senescent, stratum 1.5—2 m tall, 10—30% canopy cover at sample point.

Stratum 3. *Micromyrtus imbricata* and *Casuarina* sp. nov. shrubs. Numerous other species present. All species senescent; stratum 0—0.5 m tall, 10—30% canopy cover at sample point.

#### Comments

No evidence of regeneration from seed, weeds, grasses, or utilisation by humans or stock. No evidence of fire.

Occasional *Casuarina acutivalvis* and *C. pinaster* shrubs emergent from stratum 2.

#### Litter

Sparse, terete leaves, broad leaves and twigs, clumped to *ca* 1 cm deep beneath vegetation. Clumps *ca* 1 m apart.



## Soil

Friable soil at least 60 cm deep.

0—1 cm soil plus organic dust.

1 cm onwards moderately pedal, sandy, coherent, unbleached, non-calcareous, pH 6.2, very pale brown, 10 YR 7/3, sandy clay loam. Sand grains are quartz, subangular to subrounded, very poorly sorted; plant roots present.

## Comments

Soil reaction trend — acid; excessively well drained, situated on higher areas of very gently sloping ground. Northcote classification Uc 1.41.

## §Loc. 2.6

as loc. 2.5 but the mallees have *ca* 10% canopy cover.

## §Loc. 2.7 (Trapline 5)

### Key Description

Open shrub mallee *over* heath A *over* open low sedge *on* sandy loam.

Code eKSi.xSAc.xVLi/SL

### Loc. Details

Stratum 1. *Eucalyptus eremophila* and occasional *E. foecunda* shrub mallee. Both species senescent, stratum 4—6 m tall, 10—30% canopy cover at sample point.

Stratum 2. *Melaleuca uncinata*, *Hakea lissocarpha* and *Melaleuca spathulata* shrubs. All species senescent, stratum 1—2 m tall, 30—70% canopy cover at sample point.

Stratum 3. Restionaceae and *Lepidosperma gracile* sedges. All species mature, stratum 0—0.5 m tall, 10—30% canopy cover at sample point.

### Comments

No evidence of regeneration from seed, weeds, grasses, grazing or human utilisation. No evidence of fire.

### Litter

Abundant, comprising broad leaves, terete leaves, twigs and large debris, fairly evenly distributed to *ca* 2 cm deep.

## Soil

Friable soil at least 40 cm deep

0—2 cm soil plus organic dust.

3 cm onwards slightly pedal, sandy, coherent, unbleached, non-calcareous, pH 6.5, pinkish grey, 7.5 YR 7/2, sandy loam. Sand grains are quartz, subangular, fairly well sorted; plant roots present.

## Comments

Soil reaction trend — acid; poorly drained, part of a shallow watercourse. Northcote classification Uc 1.41.

§Loc. 2.8

as loc. 2.5

§Loc. 2.9

as loc. 2.21 (Trapline 2)

§Loc. 2.10

as loc. 2.5

§Loc. 2.11

as loc. 2.5

§Loc. 2.12

as loc. 2.7

§Loc. 2.13

Key Description

Very open shrub mallee *over* heath A *over* dwarf scrub D *on* sandy clay loam.

Code eKSr.xSAC.xSDi/SCL.

Loc. Details

Stratum 1. *Eucalyptus redunca* shrub mallee and some *Casuarina acutivalvis* shrubs. Occasional *Acacia lasiocalyx* trees. Both species mature, stratum 5—7 m tall, < 10% canopy cover at sample point.

Stratum 2. *Hakea falcata*, *Casuarina pinaster*, *Hakea multilineata*, *Leptospermum spinescens* shrubs. All species senescent, stratum 1.5—2 m tall, 30—70% canopy cover at sample point.

Stratum 3. *Dryandra* sp. B (Muir, W.A.M. survey collection), *Isopogon villosus*, *Phebalium tuberculatum*, *Dryandra ferruginea*, *Baeckea tenuifolia*, *Petrophile divaricata* and *Micromyrtus imbricata* shrubs, *Lepidosperma gracile* and *L. angustatum* sedges. All species senescent, stratum 0.5 m tall, 10—30% canopy cover at sample point.

Comments

This location is situated in a depression below a slight lateritic rise where *Grevillea hookeriana*, *Dryandra ferruginea*, *Beaufortia incana*, *Melaleuca cordata*, *Casuarina acutivalvis*, *Banksia sphaerocarpa*, *Petrophile seminuda* and occasional *Santalum acuminatum* are prominent.

At the location, there is no evidence of regeneration from seed, weeds, grasses or fire.

Litter

Moderately abundant, mostly terete leaves, broad leaves and twigs. Clumped beneath vegetation to *ca* 3 cm deep, clumps 1—2 m apart.

## Soil

Friable soil at least 50 cm deep.

0—1 cm soil plus organic dust.

2 cm onwards slightly pedal (< 30%), sandy, coherent, unbleached, non-calcareous, pH 6.2, reddish yellow, 7.5 YR 6/8, sandy clay loam. Sand grains are quartz and lateritic fragments; subrounded, moderately well sorted; plant roots present.

## Comments

Soil reaction trend — acid; well drained, located in depression below lateritic rise. Northcote classification Um 1.42.

### §Loc. 2.14

As loc. 2.5 with *Callitris roei*, *Dryandra* sp. A (Muir, W.A.M. survey collection), *Lysinema ciliatum*, *Gastrolobium trilobum*, *Isopogon teretifolius* and *Melaleuca pungens* shrubs prominent.

### §Loc. 2.15

as loc. 2.7

### §Loc. 2.16

Colluvial deposits immediately below breakaway. Soil constitutes quartz grits and clays from degraded granite pallid zone mixed with laterite. Controlling factor for vegetation appears to be run-off coupled with soil type. Apart from loc. 2.21 eucalypts, major species are *Callitris heugellii*, *Melaleuca spicigera*, *Boronia crassifolia*, *Melaleuca cuticularis*, *M. lateriflora*, *Isopogon polycephalus*, *Hakea subsulcata* and *Gastrolobium trilobum* shrubs.

### §Loc. 2.17

as loc. 2.7

### §Loc. 2.18

as loc. 2.5

### §Loc. 2.19

as loc. 2.7

### §Loc. 2.20

as loc. 2.5

### §Loc. 2.21

#### Key Description

Shrub mallee over open low scrub A on silt loam

Code eKSc.xSAr/SiL

### Loc. Details

Stratum 1. *Eucalyptus eremophila*, *E. redunca* and *E. flocktoniae* shrub mallee. All species mature, stratum 4–7 m tall, 30–70% canopy cover at sample point.

Stratum 2. *Melaleuca uncinata*, *M. undulata*, and *Gastrolobium crassifolium* shrubs. All species senescent, stratum 1.5–2 m tall < 10% canopy cover at sample point.

No third stratum, but rare, scattered *Acacia ixiophylla* shrubs are present.

### Comments

No evidence of regeneration from seed, weeds, grasses, fire or human utilisation.

### Litter

Abundant, mostly broad leaves and twigs, evenly distributed, with some clumping beneath vegetation to 2 cm deep. Clumps 2 m apart.

### Soil

Depth indeterminate but at least 30 cm.

0–2 cm soil plus organic dust.

3 cm onwards highly pedal, earthy, coherent, slightly bleached, non-calcareous, pH 6.2, pinkish grey, 7.5 YR 6/2, silt loam. Grains are mostly rock fragments, with some quartz, subrounded, very poorly sorted; plant roots present.

### Comments

Soil reaction trend — acid; poorly drained, situated in very broad shallow watercourse leading from breakaway. Northcote classification Um 6.22.

### §Loc. 2.22 (Trapline 9)

#### Key Description

Very open shrub mallee over scrub over low heath C on clay loam.

Code eKSr.xSi.xSCc/K-CL.

### Loc. Details

Stratum 1. *Eucalyptus albida* shrub mallee with scattered *Grevillea hookeriana* and *Casuarina acutivalvis* shrubs.

All species senescent, stratum 3–5 m tall, < 10% canopy cover at sample point.

Stratum 2. *Melaleuca laxiflora*, *M. seriata*, *Hakea falcata* and *H. incrassata* shrubs. All species senescent, stratum 2–3 m tall, 10–30% canopy cover at sample point.

Stratum 3. *Beaufortia bracteosa*, *Dryandra* sp. B. (Muir, W.A.M. survey collection) shrubs. All species senescent, stratum 0–1 m tall, 30–70% canopy cover at sample point.

## Comments

No evidence of regeneration from seed, weeds, grasses, grazing, fire or human utilisation.

## Litter

Moderately abundant, mostly terete leaves and twigs, clumped beneath vegetation to *ca* 2 cm deep. Clumps *ca* 1—2 m apart.

## Soil

Friable soil at least 40 cm deep, probably overlying laterites.

0—2 cm soil plus organic dust.

3 cm onwards non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.2, brownish yellow, 10 YR 6/8, clay loam containing *ca* 80% ferruginous pebbles, ranging from pisolites 3—5 mm diameter to irregular pebbles up to 4 cm diameter.

## Comments

Soil reaction trend — acid; well drained, situated on side of gently sloping upland. Northcote classification K—Um 1.42

### §Loc. 2.23

Basically as loc. 2.5 with very abundant *Gastrolobium trilobum* in disturbed area of old fire break adjacent to fence.

### §Loc. 2.24

as loc. 2.7

### §Loc. 2.25

as loc. 2.5

### §Loc. 2.26

as loc. 2.5

### §Loc. 2.27

as loc. 2.7

### §Loc. 2.28

as loc. 2.9

### §Loc. 2.29

as loc. 2.7. With *Melaleuca uncinata* prominent in understory. *Gastrolobium crassifolium*, *Grevillea hookeriana*, *Acacia assimilis*, *Dampiera* sp. indet. common on disturbed area of old fire break adjacent to fence. None of these species common in adjacent undisturbed land.

### §Loc. 2.30

as loc. 2.7. With *Casuarina acutivalvis* prominent in stratum 1.

### §Loc. 2.31

as loc. 2.7

**§Loc. 2.32**

as loc. 2.7

**§Loc. 2.33**

as loc. 2.7

**§Loc. 2.34**

as loc. 2.21. With some understory species encroaching from adjacent associations.

**§Loc. 2.35**

as loc. 2.7. With *Banksia sphaerocarpa* and *Melaleuca lateritia* prominent in understory.

**§Loc. 2.36**

as loc. 2.7

**§Loc. 2.37 (Trapline 7)**

**Key Description**

Open shrub mallee over open scrub over open dwarf scrub on sandy clay loam.

Code eKSi.xSr.xSDr/SCL

**Loc. Details**

Stratum 1. *Eucalyptus transcontinentalis* shrub mallee. Senescent, stratum 6—10 m tall, 10—30% canopy cover at sample point.

Stratum 2. *Melaleuca uncinata*, *M. eleutherostachya* shrubs. Both species senescent, stratum 2—3 m tall, < 10% canopy cover at sample point.

Stratum 3. *Dodonaea bursariifolia*, *Grevillea integrifolia*, *Templetonia sulcata* shrubs. All species senescent, stratum 0—0.5 m tall, < 10% canopy cover at sample point.

**Comments**

No evidence of regeneration from seed, weeds, grasses or grazing. Timber has been removed from the area, presumably for fence posts.

**Litter**

Moderately abundant, mostly bark, broad leaves, twigs and large debris, clumped beneath vegetation to ca 3 cm deep. Clumps ca 2 m apart.

**Soil**

Friable soil at least 30 cm deep.

0—1 cm soil plus organic dust.

3 cm onwards non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.3, pinkish grey, 7.5 YR 7/2, sandy clay loam. Sand grains are quartz and rock fragments, subrounded, poorly sorted; plant roots present.



## Comments

Soil reaction trend — acid; poorly drained, situated in lowlying area of shallow watercourse. Northcote classification Um 1.41.

## SHRUB FORMATIONS: NORTH TARIN ROCK RESERVE

### §Loc. 3.1 (Trapline 10)

#### Key Description

Open scrub *over* dwarf scrub C *on* sand.

Code n<sub>1</sub>Sr.xSCi/S.

n<sub>1</sub> = *Grevillea hookeriana*

#### Loc. Details

Stratum 1. *Grevillea hookeriana* shrubs. Immature, stratum 1–3 m tall, < 10% canopy cover at sample point.

Stratum 2. *Synaphaea petiolaris*, *Casuarina pinaster* and Restionaceae shrubs and sedges. Immature, stratum 0–1 m tall, 10–30% canopy cover at sample point.

#### Comments

All species regenerated from seed or coppice. Area was ploughed 10–11 years before this survey and has regrown. No weeds or grasses present. Evidence of fire from time of clearing.

#### Litter

Sparse, mostly broad leaves, clumped to 1 cm deep, clumps 3 m apart.

#### Soil

As for loc 4.1.

## HEATH FORMATIONS: NORTH TARIN ROCK RESERVE

### §Loc. 4.1 (Trapline 1)

#### Key Description

Low scrub A *over* low heath C *on* sand.

Code xSAi.xSCc/S.

#### Loc. Details

Stratum 1. *Casuarina pinaster*, *Hakea adnata*, *Leptospermum erubescens* shrubs. All species mature, stratum 1–2 m tall, 10–30% canopy cover at sample point.

Stratum 2. *Petrophile ericifolia*, *Banksia baueri*, *Eremaea pauciflora* shrubs. All species mature, stratum 0.5–1 m tall, 10–30% canopy cover at sample point.

## Comments

No evidence of regeneration from seed, fire, weeds, grasses or grazing.

## Litter

Moderately abundant, mostly terete leaves, clumped beneath vegetation to 2 cm deep. Clumps 1–5 m apart.

## Soil

Friable soil probably of considerable depth.

0–0.5 cm soil plus organic dust.

1 cm onwards non-pedal, sandy, coherent, unbleached, non-calcareous, pH 6.5, light grey, 10 YR 7/1, sand. Grains are quartz mostly subrounded, but some rounded, fairly well sorted; plant roots present.

## Comments

Soil reaction trend — neutral; excessively well drained, situated on top of very low hill. Northcote classification Uc 1.44.

### §Loc. 4.2

as for loc. 4.1

### §Loc. 4.3

as for loc. 4.1 but soil has ca 20% gravel content.

## BREAKAWAY COMPLEX: NORTH TARIN ROCK RESERVE

### §Loc. 6.1

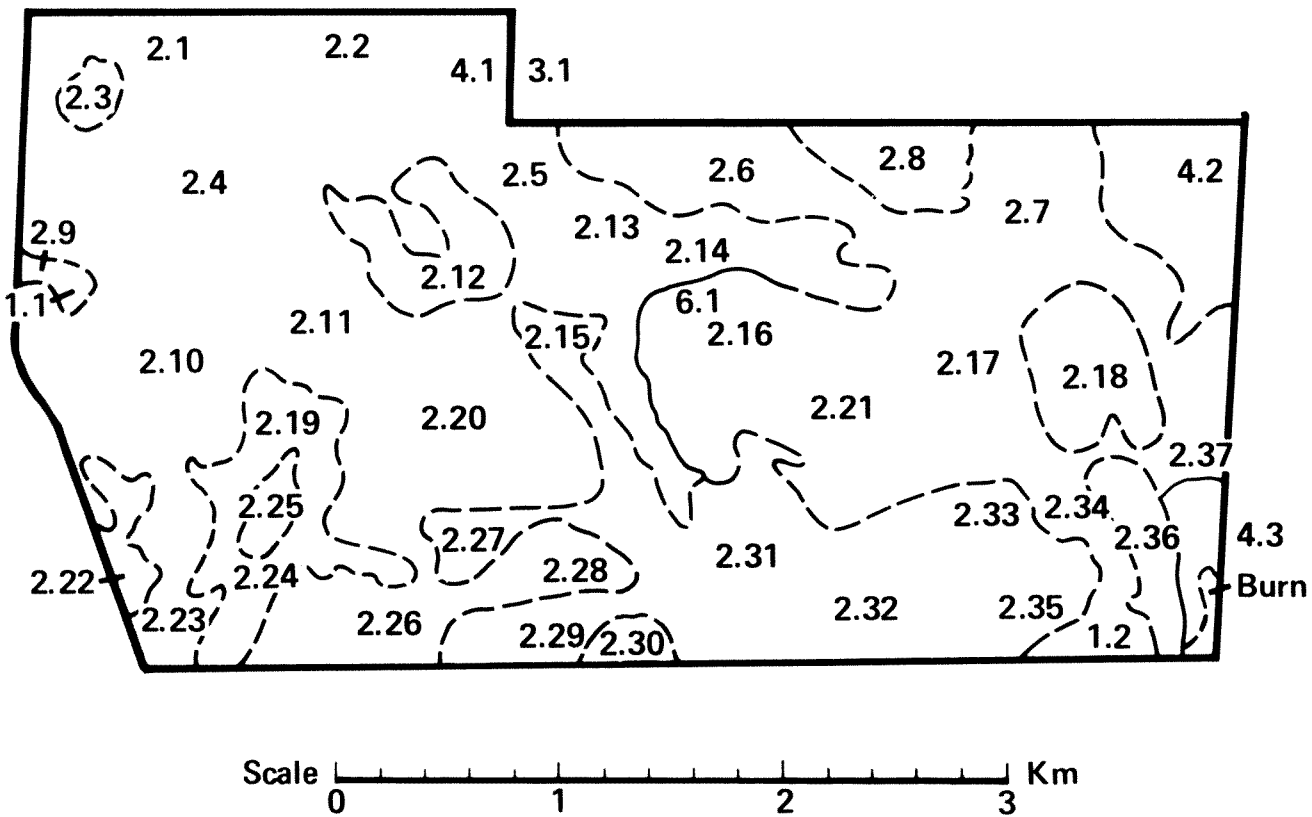
Breakaway complex of tumbled boulders beneath a visor 1–2 m thick of laterite overlying pallid zone clays mixed with gravel.

Vegetation density and height variable depending on location. Common species were *Banksia sphaerocarpa*, *Casuarina acutivalvis*, *Mirbelia deserti* and *Hakea multilineata*. Also present were *Hakea ceratophylla* growing mostly on the exposed visor edge and tangled masses of *Billardiera variifolia* growing over all species. Occasional *Grevillea insignis* are present.

## DISCUSSION

### Formations and Habitat

There are basically two formations on Tarin Rock Reserve (TR). Firstly, woodlands which are restricted to depressions or watercourses where the soil has a finer texture, or to medium textured, lateritic, poorly drained soils on hillslopes. Secondly, sparse to moderately dense mallee associations; commonly the density of the understory is inversely related to that of the



Map 2. North Tarin Rock Reserve, showing vegetation areas as at 1975, and burn pattern as at December 1972. Vegetation boundaries shown as solid lines are ecotones < 60 m wide. Broken lines are ecotones 60–120m wide.

mallee layer. Where the mallees become very sparse the association tends to become heath-like. At TR loc. 2.6 (4.1) and 2.35, the association has been grouped under mallee, as these are present, but utilisation by fauna is almost certainly as a heath. Thus there are three basic habitat distinctions but only two basic formations as determined on structure.

On North Tarin Rock (NTR) Reserve there are three formations. Firstly, woodland in low-laying areas; secondly, mallee associations of varying density, some so sparse as to be heathlike; and thirdly, true heaths with no mallees.

The area of each formation (as determined from 1972 air photograph) is set out below:

Tarin Rock	Main Reserve	Water Reserve	Adjacent
Woodland	56.7 ha	101.6 ha	746.8 ha
Mallee 0—30%	1954.6 ha	280.2 ha	2000.8 ha
North Tarin Rock	Reserve	Adjacent	
Woodland	14 ha	63 ha	
Mallee 30—70%	66 ha	} 1020 ha	
Mallee 10—30%	542 ha		
Mallee < 10%	712 ha		
Heath	80 ha		
Shrubs	—	47 ha	

On TR woodland is poorly represented (*ca* 3% of the Reserve), but inclusion of the Water Reserve in the Fauna and Flora Reserve would increase the proportion to *ca* 6.6%. An added advantage of this inclusion would be to increase the reserved area of *E. salmonophloia* woodland, a formation poorly preserved in the wheatbelt.

On NTR woodland is also poorly represented, but adjacent areas of woodland are small and disjointed and are some distance from the Reserve and each other. It is unlikely additional woodland could be included without taking up large tracts of land, and even then, the total area would be raised to less than 3%.

True heath (mallees totally absent) is also poorly represented, being virtually absent on TR (except for a small area on the north west corner of loc. 2.29) and being represented on NTR by only 3.5% of the Reserve's area. There is not much true heath adjacent to either Reserve.

On NTR faunal utilisation is probably in five habitat types — woodland, mallee 30—70%, mallee 10—30%, pure heath and mallee/heath < 30% and breakaways (based on physiognomy).

A sixth habitat type, not represented within the Reserve is found at NTR loc. 3.1 (shrubland). This is probably significant for birds, as it provides raised observation perches over a heath-like understory (c.f. single stratum heaths). The mallee/heaths provide similar perches but differ in that the mallees provide *covered* perches whereas NTR loc. 3.1 does not.

The floristic structure of NTR loc. 3.1 also differs from any other association on the Reserve.

In terms of habitat, the woodlands on TR tend to be mature to senescent, thus providing habitats for some vertebrates in hollow limbs and trunks. In contrast, those of NTR tend to be either immature to mature, but not senescent, and such sites are limited. There is virtually no understory present at any of the sites and hence no subcanopy cover, except that provided by the abundant litter containing large debris and logs.

In denser mallee associations, understory species are low in number and density, but broad leaf litter, bark and large debris are common.

It could be speculated that, as the mallees are mostly 4—6 m tall and have numerous trunks, predatory bird movement below the canopy is probably restricted, while prey species utilising the ground or sub-canopy space would be less restricted and have abundant cover.

Sparse mallee areas provide a heathlike habitat with high floristic diversity and cover for ground dwelling species, coupled with raised observation perches for birds. Litter tends to be sparse and consists mostly of terete leaves and twigs, offering little cover. Strips of bark fallen from mallees probably account for most of the litter cover.

The situation is similar where the mallee grades into heath, and in the heaths with no overstory. Here the vegetation tends to consist of true heath species e.g. *Dryandra cirsioides*, or of the same species as found in the mallee heaths, but the plants having a higher foliage density. (Significance of foliage density is discussed in Muir, 1976.)

Breakaway associations with a visor of laterite overlying an eroded pallid zone occurs only at loc. 6.1 on NTR. Although not large, the breakaway provides high runoff for a small area, resulting in dense vegetation, (NTR loc. 2.16) and has a few species, e.g. *Mirbelia deserti*, not found elsewhere on the reserve.

### Floristics

It is appreciated that the species collections were limited. However, they represent most of the formations present.

The survey produced 154 species for the two Reserves, of which 85 were found on TR Reserve and 105 on NTR Reserve. Thirty-nine species were found on both Reserves. Thus about 25% of the total species examined were

common to both. Floristically, therefore, the Reserves are dissimilar. This is due to the predominance of sandy heaths on NTR, and the fire induced seral stages on TR which contains a suite of species not found elsewhere on either Reserve. If the fire-induced species are excluded, still only about 30% of the species collected are common to both Reserves.

Regarding fire-induced seral stages, TR loc. 2.18 contains abundant *Conospermum amoenum*, *Grevillea eryngioides*, *Lechenaultia biloba* and *Lechenaultia formosa*, species not recorded outside the burnt area. Similarly TR loc. 1.1 had *Acacia celastrifolia*, *Goodenia scapigera*, *Logania* sp. nov. and *Phebalium* sp. not found elsewhere.

Kitchener (pers. comm.) recorded *Hakea subsulcata* and *Spyridium denticuliferum* at TR loc. 1.8 prior to the 1972 fire, but neither was found during the 1975 survey at this location.

Assuming all these species to be present outside the burn area, but not located, there has still been a great increase in numbers after the fire.

Thus as might be expected, following a fire the species change, the numbers change, and a new structure is produced. In terms of habitat, the area on TR is now a heath and is almost certainly utilised as such by the vertebrate fauna.

As the seral sequence progresses, the habitat will probably become 'shrub land', perhaps with less floristic diversity, and finally return to a 'mallee' formation, possibly with a further reduction in number of plant species.

Family distribution found on the two reserves is set out in **Table 3**.

TABLE 3.

Family	No. species recorded
Apiaceae	1
Asteraceae	2
Casuarinaceae	3
Cupressaceae	2
Cyperaceae	7
Dicrastylidaceae	3
Dilleniaceae	2
Epacridaceae	1
Fabaceae	10
Goodeniaceae	4
Loganiaceae	1
Malvaceae	1
Mimosaceae	7
Myrtaceae	42
Pittosporaceae	1
Poaceae	1
Proteaceae	50
Restionaceae	3
Rhamnaceae	2



TABLE 3. (Continued)

Family	No. species recorded
Rutaceae	3
Santalaceae	3
Sapindaceae	1
Stylidiaceae	1
Thymeliaceae	1
Violaceae	1
Xanthorrhoeaceae	1

Twenty-six families are represented, dominated by Proteaceae, Myrtaceae and Fabaceae.

As the survey was brief and not all areas were examined in detail, the true species number is probably closer to 300 (excluding fungi, lichens and bryophytes). Tutanning Reserve, about 115 km north-west of Tarin Rock has about 400 species recorded for it, and is only about half the area (Marchant 1973).

The TR and NTR Reserves are therefore floristically poor, although several species are found there which are considered rare or endangered by Specht (1974) namely *Dryandra pteridifolia*, *Hakea baxteri*, *Isopogon drummondii*, *Lechenaultia formosa* and *Santalum acuminatum*.

A final synthesis of all ecological and floristic data for the Reserves will be included in the final wheatbelt study to be presented at a later date.

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APPENDIX  
LIST OF PLANT SPECIES RECORDED  
AT EACH LOCATION

Species collected before the 1975 survey and identified by the Western Australian Herbarium are denoted by \*.

Specimens lodged in the Western Australian Museum survey collection are denoted (S.C.).

Only locations with detailed ecological data are included in this list.

TARIN ROCK RESERVE

**Loc. 1.1.**

<p><i>Acacia celastrifolia</i> <i>Dryandra ferruginea</i> <i>Eucalyptus falcata</i> <i>E. gardneri</i> <i>E. salmonophloia</i> <i>Goodenia scapigera</i></p>	<p><i>Hibbertia enervia</i> <i>Logania</i> sp. nov. (S.C.) <i>Phebalium</i> sp. (S.C.) <i>Spyridium denticuliferum</i> * <i>Synaphaea petiolaris</i></p>
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**Loc. 1.2**

<p><i>Casuarina acutivalvis</i> <i>Eucalyptus falcata</i> <i>E. gardneri</i> <i>Gastrolobium spinosum</i> <i>Hakea lissocarpa</i></p>	<p><i>H. multilineata</i> <i>Hibbertia enervia</i> <i>Phebalium filifolium</i> <i>Platysace maxwellii</i></p>
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**Loc. 1.3**

<p><i>Acacia subglauc</i> <i>Eucalyptus loxophleba gratiae</i> <i>E. occidentalis</i> * <i>Exocarpus aphyllus</i></p>	<p><i>Melaleuca adnata</i> <i>M. uncinata</i> <i>Olearia muelleri</i></p>
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**Loc. 1.4**

*Eucalyptus falcata*

**Loc. 1.5**

<p><i>Acacia acuaria</i> <i>Alyogyne hakeifolia</i> <i>Choretrum</i> sp.</p>	<p><i>Eucalyptus occidentalis</i> * <i>Melaleuca adnata</i></p>
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**Loc. 1.6**

*Eucalyptus occidentalis* \*  
*E. salmonophloia*  
*E. salubris*  
*Exocarpus aphyllus*

**Loc. 1.7**

*Eucalyptus occidentalis* \*  
*E. salmonophloia*  
*E. salubris*  
*Exocarpus aphyllus*

**Loc. 1.8**

*Eucalyptus flocktoniae* \*  
*Hakea subsulcata* \*  
*Spyridium denticuliferum* \*

**Loc. 1.9**

*Eucalyptus gardneri* \*  
*Hakea subsulcata* \*  
*Spyridium denticuliferum* \*

**Loc. 2.5**

*Casuarina acutivalvis*  
*Dryandra* affin. *cirsioides*  
*Eucalyptus albida*

*Gastrolobium spinosum*  
*Isopogon teretifolius*  
*Melaleuca* affin. *scabra*

**Loc. 2.6**

*Banksia sphaerocarpa*  
*Beaufortia incana*  
*Calytrix brachyphylla*  
*Chamelaucium megalopetalum*  
*Dryandra* affin. *cirsioides*  
*D. ferruginea*  
*Eucalyptus albida*  
*Gastrolobium trilobum*  
*Grevillea* affin. *pterosperma*

*Hakea incrassata*  
*Isopogon drummondii*  
*I. teretifolius*  
*Lysinema ciliatum*  
*Melaleuca pungens*  
*M.* affin. *seriata*  
*Petrophile seminuda*  
*P. squamata*

**Loc. 2.11**

*Actinostrobos arenarius*  
*Banksia baueri*  
*Calytrix fraseri*  
*Dryandra nivea*  
*D. pteridifolia*  
*Eremaea pauciflora*  
*Eucalyptus albida*  
*E. incrassata*  
*Grevillea pritzellii*  
*Hakea falcata*  
*Hibbertia verrucosa*  
*Leptospermum ellipticum*

*L. spinescens*  
*Lysinema ciliatum*  
*Melaleuca* affin. *scabra*  
*Mesomelaena uncinata*  
*Petrophile ericifolia*  
*P. stricta*  
Poaceae gen; sp. indet.

**Loc. 2.14**

*Acacia celastrifolia*  
*A. grisea*  
*Adenanthos cygnorum*  
*Cryptandra leucophracta*  
*Cryptandra* sp. indet.  
*Dampiera dura*  
*D.* sp. indet.  
*Daviesia colletioides*

*Eucalyptus* sp. (? *albida*)  
*Leptomeria* sp.  
*Logania* sp. nov.  
*Phebalium* sp.  
*Physopsis lachnostachya*  
*Pityrodia bartlingii*  
*Stylidium breviscapum*  
*Synaphaea petiolaris*

**Loc. 2.16**

*Astroloma* sp.\*  
*Beaufortia bracteosa* \*  
*Choretrum glomeratum* \*  
*Eucalyptus eremophila* \*  
*E. flocktoniae* \*  
*Hakea crassifolium* \*  
*H. lissocarpha* \*  
*H. subsulcata* \*

*Hibbertia enervia*  
*Hybanthus floribundus*  
*Isopogon teretifolius* \*  
*Gastrolobium spinosum* \*  
*Goodenia scapigera*  
*Grevillea insignis*  
*Lepidosperma brunonianum* \*  
*Spyridium denticuliferum* \*

**Loc. 2.17**

*Acacia assimilis*  
*Cryptandra* possibly *pungens*  
*Dampiera dura*  
*Eucalyptus* possibly *albida*  
and/or *incrassata*  
*Grevillea* affin *pritzellii*  
*Hakea ambigua*

*Laxmannia* sp.  
*Lepidosperma brunonianum*  
*Melaleuca uncinata* \*  
*M.* sp. indet. \*  
*Mesomelaena tetragona*  
Restionaceae gen; sp. indet (S.C.)

**Loc. 2.18**

*Adenanthos argyraea*  
*Banksia sphaerocarpa*  
*Casuarina* sp. nov.  
*Conospermum amoenum* var.  
*croniniae*  
*C. ephedroides*  
*Daviesia brevifolia*  
*D. colletioides*  
*Dryandra* sp. indet. A (S.C.)  
*D. affin. cirsioides*  
*D. ferruginea*  
*Eucalyptus* (2 species) possibly  
*E. albida* and *E. incrassata*

*Grevillea eryngioides*  
*G. pritzellii*  
*G. affin. uncinulata*  
*Hakea ambigua*  
*H. obliqua*  
*Lepidosperma* affin. *gracile*  
*Lechenaultia biloba*  
*L. formosa*  
*Melaleuca* affin *seriata*  
*Schoenus* affin. *brevifolius*  
*Xanthorrhoea nana*  
*Gastrolobium* sp.

**Loc. 2.19**

*Eucalyptus eremophila*  
*E. falcata*  
*Choretrum glomeratum*  
*Hakea subsulcata*

*Melaleuca* affin. *scabra*  
*M. uncinata*  
*Phebalium filifolium*

**Loc. 2.22**

*Casuarina pinaster*  
*Hakea incrassata*

**Loc. 2.35**

*Cryptandra glabriflora*  
*Eucalyptus* sp. (? *albida*)  
*Melaleuca cardiophylla*

## NORTH TARIN ROCK RESERVE

**Loc. 1.1**

*Eucalyptus flocktoniae*

**Loc. 1.2**

*Eucalyptus kondininensis* \*  
*E. redunca*  
*E. salmonophloia*  
*Gahnia ancistrophylla* \*

*Grevillea heugellii*  
*Melaleuca lateriflora*  
*Olearia muelleri*  
*Santalum acuminatum*

**Loc. 2.5**

*Acacia heteroclita*  
*Baeckea floribunda*  
*Banksia sphaerocarpa*  
*Calectasia cyanea*  
*Casuarina acutivalvis*  
*C. pinaster*  
*C. sp. nov. (S.C.)*  
*Chamelaucium megalopetalum*  
*Chorizema glycinifolium*  
*Dampiera* sp.  
*Dryandra pteridifolia*  
*Eucalyptus albida*  
*E. decipiens*  
*E. falcata* \*  
*Hakea baxteri*  
*H. crassifolia* \*  
*H. falcata*  
*H. incrassata*  
*H. strumosa*  
*H. subsulcata* \*

*Isopogon drummondii*  
*I. teretifolius*  
*I. villosus*  
*Lambertia ilicifolia*  
*Lepidosperma gracile*  
*Leptospermum spinescens*  
*Melaleuca cordata*  
*M. scabra*  
*M. seriata*  
*M. thyoides*  
*Mesomelaena uncinata*  
*Micromyrtus imbricata*  
*Petrophile ericifolia*  
*P. seminuda*  
*P. shuttleworthiana*  
*P. squamata*  
*Pityrodia bartlingii*  
*Styphelia tenuiflora* \*  
*Synaphaea decorticans*  
*Verticordia serrata*

**Loc. 2.7**

*Brachyloma concolor* \*  
*Eucalyptus eremophila*  
*E. foecunda*  
*E. kondininensis* \*  
*Gahnia ancistrophylla* \*  
*Hakea falcata* \*  
*H. lissocarpha*  
*H. subsulcata* \*

*Lepidosperma brunonianum* \*  
*L. gracile*  
*Leptospermum erubescens* \*  
*Leucopogon minutifolius* \*  
*Melaleuca spathulata*  
*M. spicigera* \*  
*M. uncinata*  
Restionaceae gen; sp. indet. (S.C.)

**Loc. 2.9**

*Eucalyptus eremophila*  
*E. flocktoniae*  
*E. kondininensis* \*

*Gastrolobium crassifolium*  
*Melaleuca uncinata*  
*M. undulata*

**Loc. 2.13**

*Acacia lasiocalyx*  
*Baeckea tenuifolia*  
*Banksia sphaerocarpa*  
*Beaufortia incana*  
*Casuarina acutivalvis*  
*C. pinaster*  
*Dryandra ferruginea*  
*Dryandra* sp. B. (S.C.)  
*Eucalyptus redunca*  
*Grevillea hookeriana*  
*Hakea falcata*

*H. multilineata*  
*Isopogon villosus*  
*Lepidosperma angustatum*  
*L. gracile*  
*Leptospermum spinescens*  
*Melaleuca cordata*  
*Micromyrtus imbricata*  
*Petrophile divaricata*  
*P. seminuda*  
*Phebalium tuberculatum*  
*Santalum acuminatum*

**Loc. 2.14**

*Callitris roei*  
*Dryandra* sp. A. (S.C.)  
*Gastrolobium trilobum*

*Isopogon teretifolius*  
*Lysinema ciliatum*  
*Melaleuca pungens*

**Loc. 2.16**

*Boronia crassifolia*  
*Callitris heugellii*  
*Gastrolobium trilobum*  
*Hakea subsulcata*

*Isopogon polycephalus*  
*Melaleuca cuticularis*  
*M. lateriflora*  
*M. spicigera*

**Loc. 2.21**

*Acacia ixiophylla*  
*Eucalyptus eremophila*  
*E. flocktoniae*  
*E. redunca*

*Gastrolobium crassifolium*  
*Melaleuca uncinata*  
*M. undulata*

**Loc. 2.22**

*Acacia assimilis*  
*Aotus* affin. *preissii*  
*Beaufortia bracteosa*  
*Casuarina acutivalvis*  
*Casuarina* sp. nov. (S.C.)  
*Daviesia anceps*  
*Dryandra* affin. *cirsioides*  
*Dryandra* sp. B. (S.C.)  
*Eucalyptus eremophila*  
*Grevillea hookeriana*  
*Hakea falcata*

*H. incrassata*  
*H. scoparia*  
*Hibbertia* sp. \*  
*Lepidosperma gracile*  
*Leptospermum spinescens*  
*Melaleuca laxiflora*  
*M. seriata*  
*Persoonia striata*  
*Petrophile divaricata*  
*Xanthorrhoea reflexa*

**Loc. 2.29**

*Acacia assimilis*  
*Dampiera* sp. (S.C.)  
*Gastrolobium crassifolium*  
*Grevillea hookeriana*  
*Melaleuca uncinata*

**Loc. 2.30**

*Casuarina acutivalvis*

**Loc. 2.35**

*Banksia sphaerocarpa*  
*Melaleuca lateritia*

**Loc. 2.36**

*Dryandra* sp. A. (S.C.)

**Loc. 2.37**

*Dodonaea bursariifolia*  
*Eucalyptus eremophila* \*  
*E. transcontinentalis*  
*Grevillea integrifolia*

*Melaleuca eleutherostachya*  
*M. uncinata*  
*Templetonia sulcata*

**Loc. 3.1**

*Acacia diptera* \*  
*Adenanthos argyraea* \*  
*A. flavidiflora*  
*Banksia baveri*  
*Casuarina pinaster*  
*Caustis dioica*  
*Comesperma scoparium* \*  
*Conospermum bracteosum*  
*Dampiera* sp.  
*Daviesia colletioides*

*D. daphnoides*  
*D. teretifolia* \*  
*Grevillea hookeriana*  
*G. pritzellii*  
*Isopogon teretifolius*  
*Lachnostachys albicans*  
*L. ferruginea* \*  
*Micromyrtus imbricata*  
*Synaphaea petiolaris*  
*Verticordia* sp.

**Loc. 4.1**

*Banksia baueri*  
*B. sphaerocarpa* \*  
*B. violacea*  
*Casuarina pinaster*  
*Eremaea pauciflora*  
*Hakea baxteri*  
*H. corymbosa*  
*H. crassifolium* \*  
*H. incrassata*  
*H. subsulcata* \*

*Isopogon teretifolius* \*  
*Leptospermum erubescens*  
*Lysinema ciliatum*  
*Melaleuca thyoides* \*  
*Petrophile ericifolia*  
*P. stricta*  
*Pimelia* sp.  
Restionaceae sp. 3 (S.C.)  
*Styphelia tenuiflora* \*

**Loc. 6.1**

*Banksia sphaerocarpa*  
*Billardiera variifolia*  
*Casuarina acutivalvis*  
*Grevillea insignis*

*Hakea ceratophylla*  
*H. multilineata*  
*Mirbelia deserti*