

May 2009

WESTERN SHIELD MONITORING PROGRAM 2009

SURVEY AREA: LAKE SHASTER NATURE RESERVE (East of Oldfield River)

Emma Adams

May 2009

Introduction

Lake Shaster Nature Reserve (Figure 1) is situated south of Munglinup and about half way between Ravensthorpe and Esperance. The reserve is included in the Western Shield predator baiting program with aerial baiting and perimeter baiting, however no internal tracks are baited. It has also been suggested that baiting cease all together due to the high surface area – perimeter ratio of the reserve resulting in rapid re-invasion post-baiting.

The area is poorly known in terms of its conservation values, and although some vertebrate fauna surveys were carried out in 2004, these surveys did not target areas of Lake Shaster Nature Reserve to the east of the Oldfield River.

We set out to determine the conservation values of the eastern parts of Lake Shaster Nature Reserve in terms of the vertebrate animal species that occur in the area. Specifically, we aimed to trap small to medium sized mammals, frogs and reptiles and opportunistically collect invertebrate species. We also set out to gain an insight into the floristic components within this part of the reserve by installing permanent flora quadrats and conducting vegetation transects.

Methods

Thirty pit traps were established over five lines within 5 different vegetation communities, with twenty five pits along the Washpool track and another five pits on the northern boundary of the reserve, which were existing pits from the 2004 surveys (Figure 2).

Pit lines were established in *Banksia speciosa*/*Eucalyptus pleurocarpa* scrub, *Calothamnus* low heath, *Banksia speciosa* thicket, *Melaleuca lanceolata* low woodland and *Dryandra nervosa*/*Eucalyptus pleurocarpa* Heath which was recovering post fire (2006).



Left: *Banksia speciosa*/*Eucalyptus pleurocarpa* scrub Right: *Calothamnus* low heath



Left: *Dryandra nervosa*/*Eucalyptus pleurocarpa* heath Right: *Melaleuca lanceolata* low woodland.

Trap lines (pairs of traps consisting of one Sheffield cage trap and one medium Elliott trap at 200 m intervals) were established for 10km along the Washpool track from the western boundary to the eastern boundary of the Nature Reserve (Figure 2). Another 2km of trap line was established on the northern boundary (Figure 2). The total number of trap nights was 600.

In addition, opportunistic observations were made on vertebrate animals via direct observation and searching for fresh tracks and other signs.

All trapping and searching was completed between the 28th April and 3rd May 2009.

Flora surveys were also carried out using both established vegetation plots and vegetation transects. Three 20m x 20m permanent plots were installed within the *Banksia speciosa*/*Eucalyptus pleurocarpa* scrub, *Dryandra nervosa*/*E. pleurocarpa* heath and within an additional vegetation type on the western boundary within *Eucalyptus/Pomaderris* scrub. Two 200m transect lines were carried out within the *Calothamnus* low heath and within an additional vegetation type near the *Calothamnus* low heath in *Acacia* scrub. For both the plots and transects, surveys recorded total species diversity and richness (Appendix 1-4??)

Results

Two species of frog were caught during the monitoring program (Table 1). Further trapping would no doubt reveal the presence of other species in the reserve.



Litoria cyclorhyncha Spotted Thighed Frog



Limnodynastes dorsalis Banjo Frog

Six species of reptile were found in the nature reserve (Table 1). Unfortunately the weather conditions weren't favourable during the trapping program with several cloudy days and cool temperatures as is evident by the lack of snake records. Trapping earlier in the year and also during spring would add considerably to this list.



Ctenotus gemmula



Acritoscincus trilineatus

Five native mammal species were recorded (Table 1) including the capture of an Echidna in a Sheffield trap! Bush rats were a common capture with 54 being caught during the week. Honey possums were recorded in all the five vegetation types with several juveniles also recorded.



Tarsipes rostratum Honey Possum

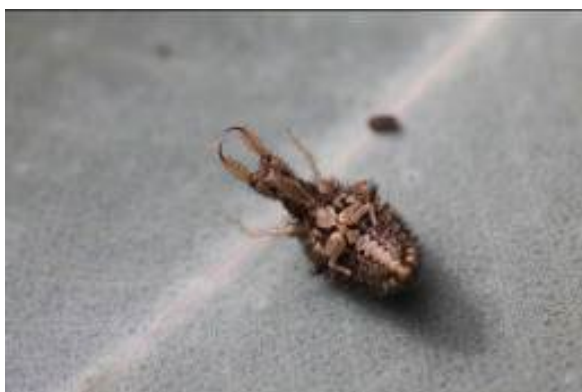


Measuring a bush rat *Rattus fuscipes*

There were also five species of introduced mammals recorded, including the house mouse, cat and fox (Table 1). The house mouse was very common throughout the study area and often two mice were caught in the same Elliott trap. Cat and fox tracks were abundant on vehicle tracks, particularly the main Washpool track.

Forty three species of bird were noted within the study area recorded opportunistically during the trapping program.

Invertebrate species were only collected from pit traps and several species have been sent to the WA Museum for identification. Antlion activity was observed within the *Melaleuca lanceolata* low woodland with many larvae pits seen in the soil under the Melaleuca.



Antlion larva



Urodacus planimanus Sand Scorpion



Caterpillar sp.



Storena fomosa

Flora survey results

Four transect lines and two vegetation plots were completed across the study area (Figures 3-6 and Appendix 8, 9).

Approximately 182 species were recorded in total.

A *Scaevola* species was recorded which as yet has not been identified. Material and photos have been sent to the WA Museum for assessment.



Scaevola sp. Lake Shaster



Flowering parts of the *Scaevola* found at Lake Shaster

Acknowledgements

Wayne Gill, Rob Jose, Graeme Hage, Kimberley Oswald, Nigel Johnston, Joel Brown and Geoff Hoggart provided valuable assistance with trapping. Cressida Wilson and Eric Lehmann assisted on the 4th and 5th day. Mary Hoggart provided valuable contributions to flora surveys and identification of specimens.

References

McNee, S. and Newbey, B. (2003). Search for the Western Ground Parrot in Cape Arid National Park and nearby areas May 2003. Unpublished report to the WA South Coast Threatened Birds Recovery Team.

Muir, B.G (1977) Biological survey of the Western Australian Wheatbelt. Pt 2: Vegetation and Habitat of Bendering Reserve. Records of the Western Australian Museum. Suppl. No. 3.

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Newbey, B. and Bradby, K. (1989) Biological survey report. Stokes National Park. September 1989. Unpublished report to the Department of Conservation and Land Management and the Western Australian Heritage Commission.

DRAFT

Table 1: Frogs, reptiles and mammals at Lake Shaster Nature Reserve**(a) Mammals**

Scientific name	Common name	Washpool track	Northern boundary
<i>Tachyglossus aculeatus</i>	Echidna	C, T	
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	T, S	T
<i>Tarsipes rostratus</i>	Honey Possum, Noolbenger	C	C
<i>Tadarida australis</i>	White-striped Freetail-bat	H	H
<i>Rattus fuscipes</i>	Western Bush Rat	C	C
<i>Mus musculus</i>	* House Mouse	C	C
<i>Oryctolagus cuniculus</i>	* Rabbit	T	T
<i>Canis lupus</i>	* Dog	T	
<i>Vulpes vulpes</i>	* Red Fox	T	T
<i>Felis catus</i>	* Cat	T	T

C = caught in trap; T = tracks or other sign; S = seen; H = heard; * = introduced species.

(b) Frogs

Scientific name	Common name	Details
<i>Litoria cyclorhyncha</i>	Spotted-thighed Frog	<i>Dryandra nervosa</i> / <i>Eucalyptus</i> heath, <i>Melaleuca lanceolata</i> low woodland
<i>Limnodynastes dorsalis</i>	Bullfrog or Banjo Frog	<i>Melaleuca lanceolata</i> low woodland

(c) Reptiles

Scientific name	Common name	Details
Family PYGOPODIDAE		
<i>Pygopus lepidopodus</i>	Common Scaly-foot	Seen on northern boundary
Family SCINCIDAE		
<i>Acritoscincus trilineatus</i>	South-western Cool-skink	<i>Banksia speciosa</i> / <i>Eucalyptus pleurocarpa</i> scrub
<i>Ctenotus gemmula</i>	Jewelled south west Ctenotus	<i>Dryandra nervosa</i> / <i>Eucalyptus</i> heath
<i>Hemiergis peronii</i>	Peron's Earless-skink	<i>Banksia speciosa</i> / <i>Eucalyptus pleurocarpa</i> scrub, <i>Melaleuca lanceolata</i> low woodland
<i>Morethia obscura</i>	Southern Pale-flecked Morethia	<i>Banksia speciosa</i> / <i>Eucalyptus pleurocarpa</i> scrub
<i>Tiliqua rugosa</i>	Shingleback (Bobtail)	Seen on Washpool track

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(d) Invertebrates

Scientific name	Common name	Details
<i>Acanthaclisis</i> sp.*	Antlion	<i>Melaleuca lanceolata</i> low woodland
<i>Urodacus planimanus</i>	Sand Scorpion	<i>Banksia speciosa</i> / <i>Eucalyptus pleurocarpa</i> scrub
<i>Storena formosa</i>	Spotted Ground Spider	<i>Dryandra nervosa</i> / <i>Eucalyptus</i> heath
<i>Cormocephalus</i> sp.	Centipede	<i>Banksia speciosa</i> / <i>Eucalyptus pleurocarpa</i> scrub
Unknown sp. 1*	Caterpillar	<i>Eucalyptus</i> / <i>Pomaderris</i> scrub
Unknown sp. 2*	Black and red wasp	<i>Dryandra nervosa</i> / <i>Eucalyptus</i> heath

* Specimens sent to the WA Museum

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Table 2: Bird species recorded in eastern parts of Lake Shaster Nature Reserve and nearby areas in April/May 2009

Common Name	Scientific Name	Common Name	Scientific Name
Musk Duck	<i>Biziura lobata</i>	Tawny crowned honeyeater	<i>Phylidonyris melanops</i>
Black Swan	<i>Cygnus atratus</i>	Restless Flycatcher	<i>Myiagra inquieta</i>
Australian Shelduck	<i>Tadorna radjah</i>	Magpie-lark	<i>Grallina cyanoleuca</i>
Pacific Black Duck	<i>Anas superciliosa</i>	Richard's pipit	<i>Anthus novaeseelandiae</i>
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	Grey Fantail	<i>Rhipidura fuliginosa</i>
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>	Willie Wagtail	<i>Rhipidura leucophrys</i>
White-faced Heron	<i>Egretta novaehollandiae</i>	Red capped parrot	<i>Purpureicephalus spurius</i>
White-bellied Sea Eagle	<i>Haliaeetus radiatus</i>	Dusky Woodswallow	<i>Artamus cyanopterus</i>
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	Grey Butcherbird	<i>Cracticus torquatus</i>
Pacific Gull	<i>Larus pacificus</i>	Australian Magpie	<i>Gymnorhina tibicen</i>
Silver Gull	<i>Larus novaehollandiae</i>	Grey Currawong	<i>Strepera versicolor</i>
Black Cormorant	<i>Phalacrocorax fuscescens</i>	Australian Raven	<i>Corvus coronoides</i>
Whistling Kite	<i>Haliastur sphenurus</i>	Welcome Swallow	<i>Hirundo neoxena</i>
Swamp Harrier	<i>Circus approximans</i>	Black-faced Cuckoo-shrike	<i>Coracina tenuirostris</i>
Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>		
Wedge-tailed Eagle	<i>Aquila audax</i>		
Brown Falcon	<i>Falco berigora</i>		
Common Bronzewing	<i>Phaps chalcoptera</i>		
Crested Pigeon	<i>Ocyphaps lophotes</i>		
White-browed Scrubwren	<i>Sericornis frontalis</i>		
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>		
Red Wattlebird	<i>Anthochaera carunculata</i>		
Little Wattlebird	<i>Anthochaera chrysoptera</i>		
Yellow-throated Miner	<i>Manorina flavigula</i>		
Brown Honeyeater	<i>Lichmera indistincta</i>		
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>		
White-cheeked Honeyeater	<i>Phylidonyris nigra</i>		
Singing honeyeater	<i>Lichenostomus virescens</i>		

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Figure 1: Lake Shaster Nature Reserve

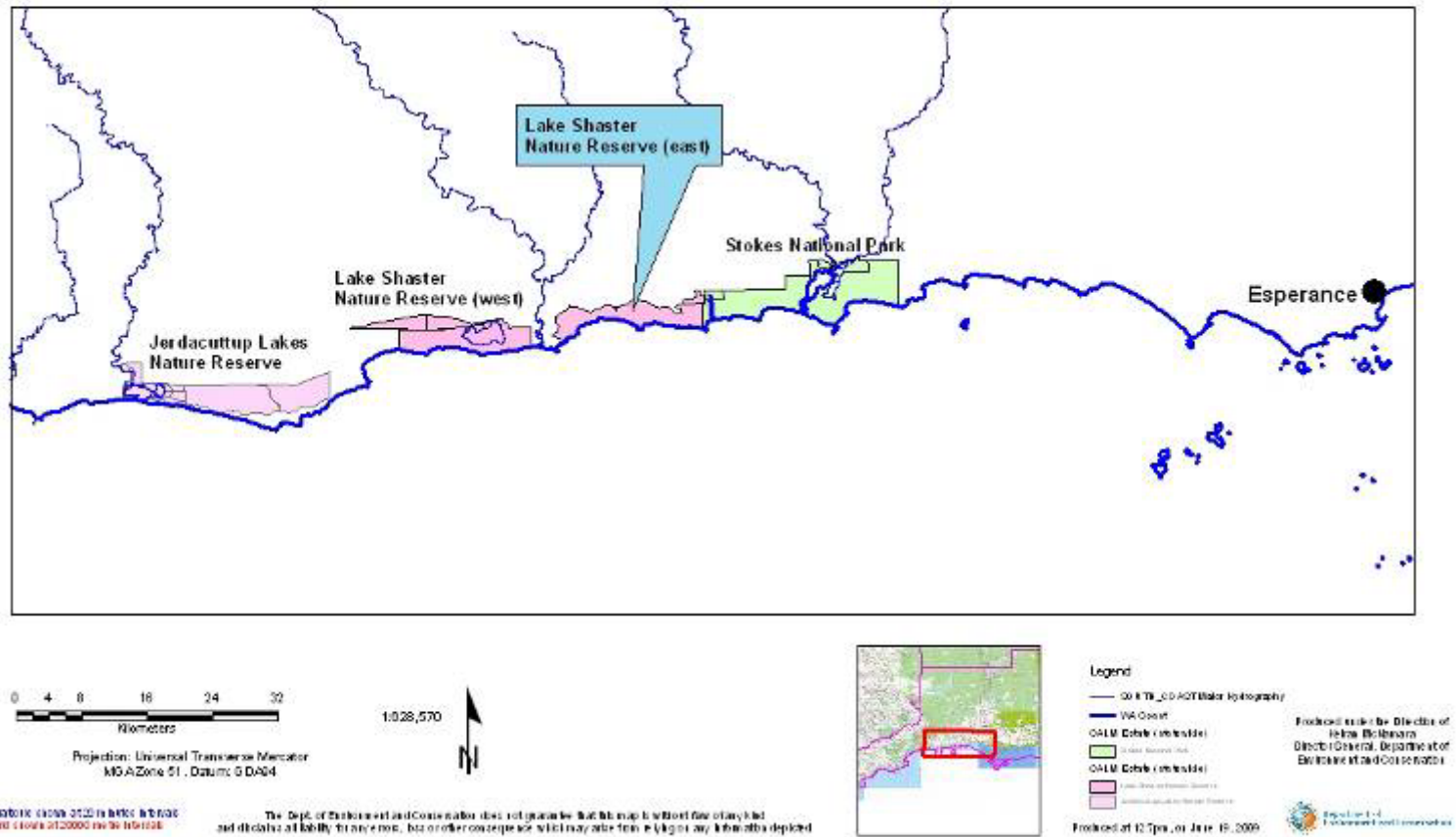


Figure 2: Location of transect trap lines and pit trap lines



0 0.3 0.6 1.2 1.8 2.4
Kilometers

Projection: Universal Transverse Mercator
MGRS Zone 51, Datum: GDA94

156,637



Graphic shows an 80 m buffer around
GAB 010111 012 0000 00 00 00 00

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Legend
Trap lines
Pit lines

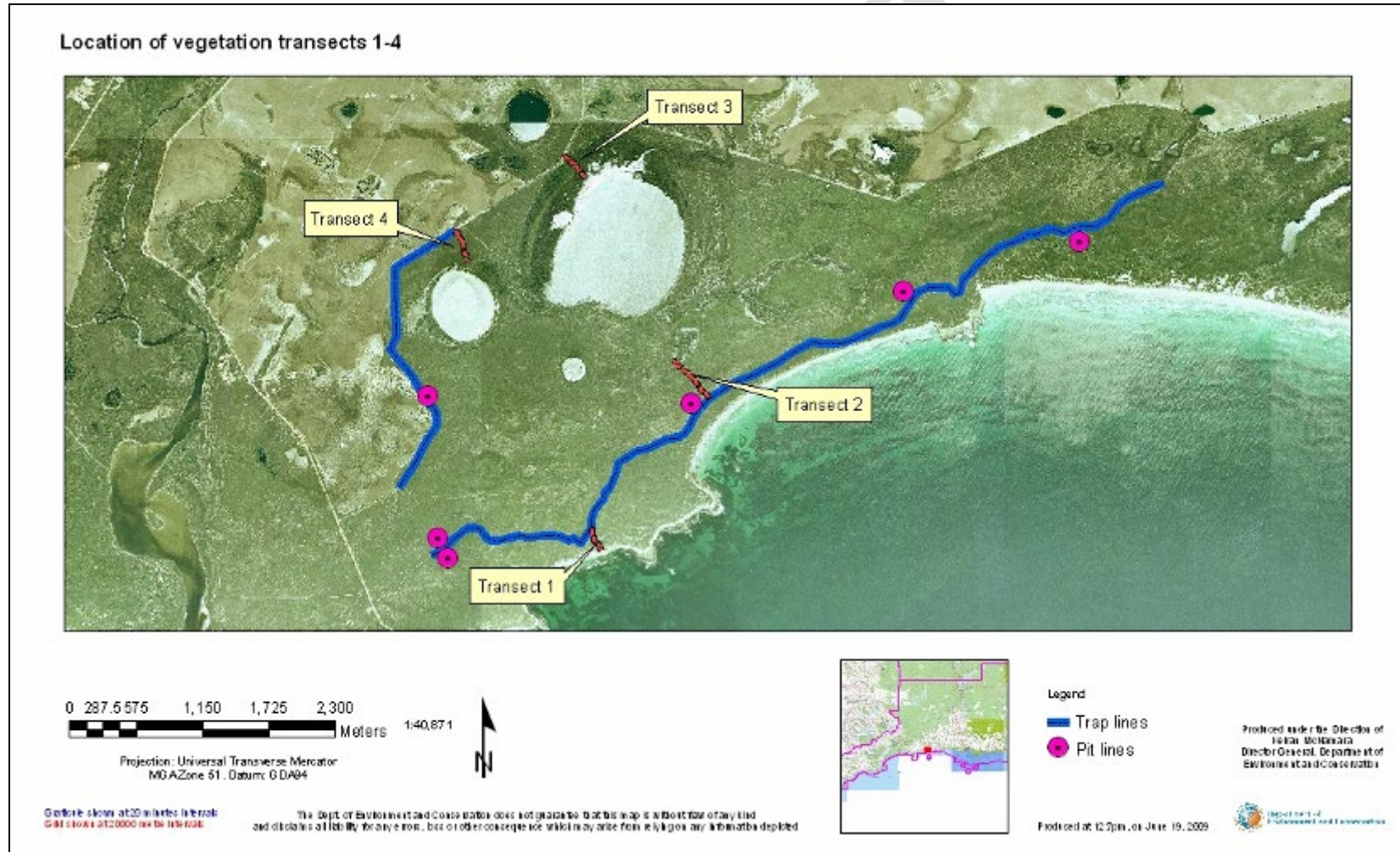
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Environment and Coastal Services
Department of Environment and Coastal Services

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Appendix 3

Location of vegetation transect lines 1-4

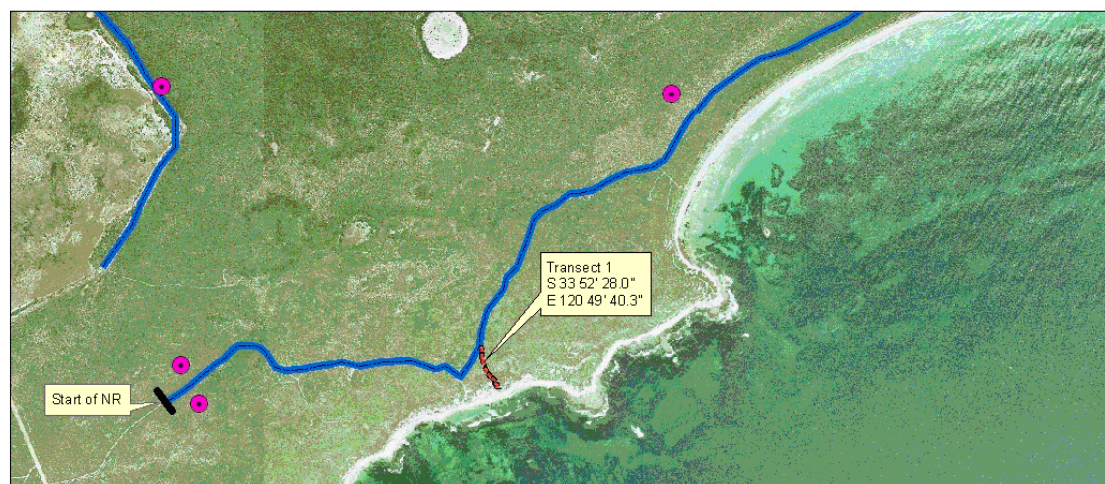


Appendix 4

Transect 1 – *Acacia/Eucalypt* scrub

S33 52' 28.0"

E 120 49' 40.3"

Figure 3: Transect 1, *Acacia/Eucalypt* scrub

0.0 0.1 0.2 0.3 0.4
Kilometers

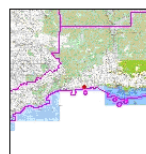
Projection: Universal Transverse Mercator
MGA Zone 51, Datum: GDA94

Contour shown at 20 m intervals in brown
Grid shown at 20000 m intervals

1:17,888



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Legend
— Trap lines
● Pit lines

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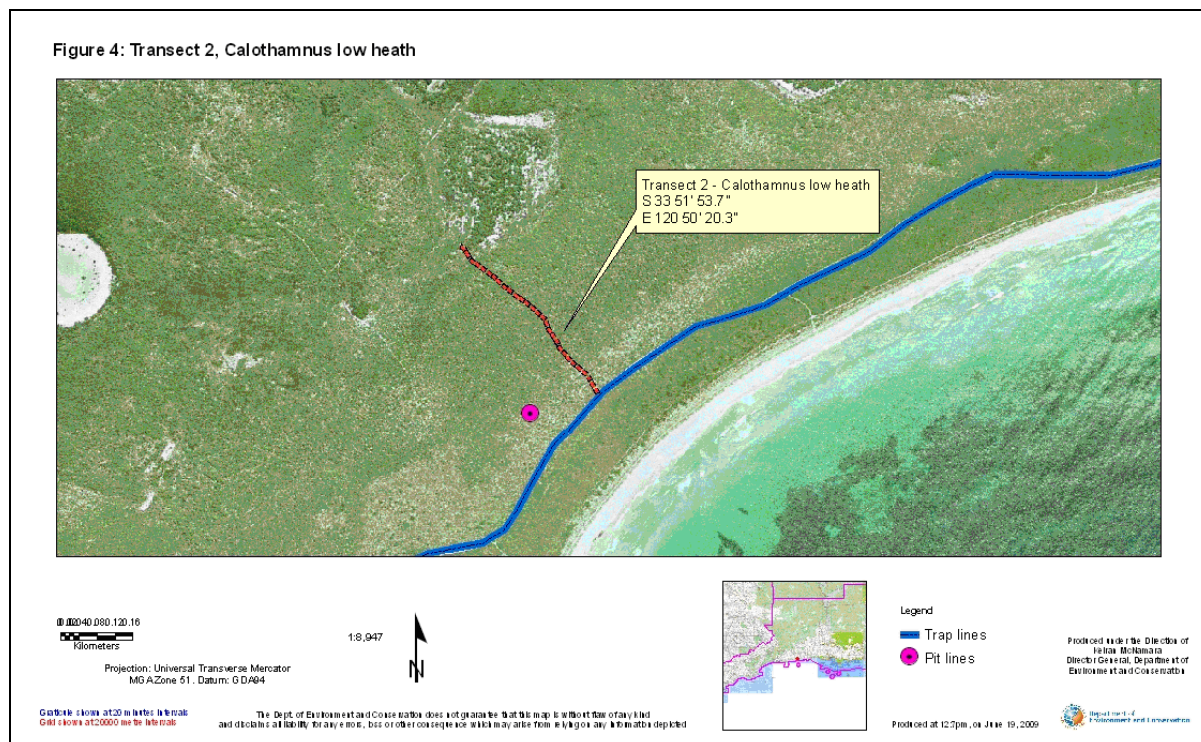
Species Name	Species Name
<i>Acacia cochlearis</i>	<i>Olearia axillaris</i>
<i>Acrotriche caudata</i>	<i>Phyllanthus calycina</i>
<i>Calothamnus quadrifidus</i>	<i>Pimelea ferruginea</i>
<i>Carpobrotus virescens</i>	<i>Pultenaea heteroclita</i>
<i>Cassutha melantha</i>	<i>Rhagodia baccata</i>
<i>Eucalyptus angulosa</i>	<i>Scaevola crassifolia</i>
<i>Exocarpos sparteus</i>	<i>Senecio pinnatifolium</i>
<i>Ficinia nodosa</i>	<i>Spyridium globulosum</i>
<i>Hakea prostrata</i>	<i>Templetonia retusa</i>
<i>Lasiopetalum discolor</i>	<i>Tetragona implexicoma</i>
<i>Leucophyta brownii</i>	<i>Thomasia angustifolia</i>
<i>Leucopogon parviflorus</i>	<i>Threlkeldia diffusa</i>
<i>Melaleuca lanceolata</i>	<i>*Arctotheca populifolia</i>
<i>Muehlenbeckia adpressa</i>	

Appendix 5

Transect 2 - *Calothamnus* low heath.

S 33 51' 53.7"

E 120 50' 20.3"

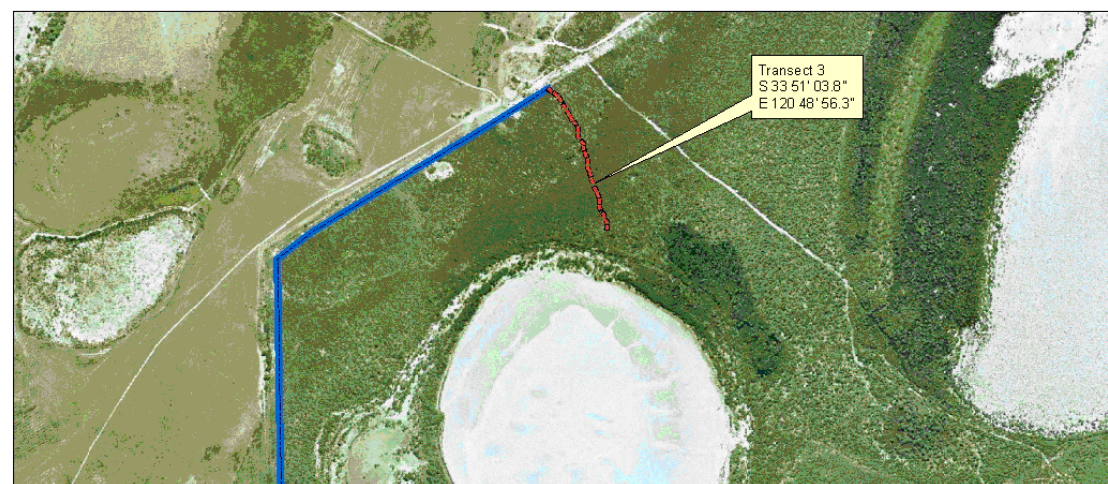
Figure 4: Transect 2, *Calothamnus* low heath

Species Name	Species Name	Species Name
<i>Acacia cyclops</i>	<i>Gompholobium tomentosum</i>	<i>Pimelea</i> sp. (no flower)
<i>Acacia pulchella</i> subsp. <i>goadbyi</i>	<i>Hakea corymbosa</i>	<i>Pimelea ferruginea</i>
<i>Acacia saligna</i>	<i>Hakea nitida</i>	<i>Platysace effusa</i>
<i>Adenanthos cuneatus</i>	<i>Hakea prostrata</i>	<i>Platysace compressa</i>
<i>Allocasuarina humilis</i>	<i>Hakea ruscifolia</i>	<i>Pseudanthus virgatus</i>
<i>Anarthria laevis</i>	<i>Hibbertia gracilipes</i>	<i>Senecio pinnatifolium</i>
<i>Anarthria scabra</i>	<i>Hibbertia racemosa</i>	<i>Scaevola crassifolia</i>
<i>Banksia speciosa</i>	<i>Hovea pungens</i>	<i>Scaevola</i> sp. White flower
<i>Bossiaea preissii</i>	<i>Isopogon teretifolia</i>	<i>Schoenus grandis</i>
<i>Calytrix decandra</i>	<i>Jacksonia spinosa</i>	<i>Spyridium globulosum</i>
<i>Calothamnus gracilis</i>	<i>Labichea lanceolata</i> subsp. <i>brevifolia</i>	<i>Synaphea phathyrantha</i>
<i>Calothamnus quadrifidus</i>	<i>Leucopogon revolutus</i>	<i>Xanthosia huegelii</i>
<i>Chordifex spathulata</i>	<i>Leucopogon minutifolius</i>	
<i>Conostylis</i> sp.	<i>Lepidosperma gladiatum</i>	
<i>Conothamnus aureus</i>	<i>Leptospermum spinescens</i>	
<i>Cryptandra myriantha</i>	<i>Logania fascicularis</i>	
<i>Dampiera linearis</i>	<i>Logania micrantha</i>	
<i>Daviesia incrassata</i> subsp. <i>reversifolia</i>	<i>Lysinema ciliatum</i>	
<i>Desmocladius flexuosa</i>	<i>Melaleuca thymoides</i>	
<i>Dianella revoluta</i>	<i>Melaleuca striata</i>	
<i>Dryandra obtusa</i>	<i>Muehlenbeckia adpressa</i>	
<i>Eriochilus dilatatus</i>	<i>Olearia axillaris</i>	
<i>Eucalyptus pleurocarpa</i>	<i>Phyllanthus</i> sp.	

Appendix 6

Transect 3 (northern boundary). Sand over granite, low heath surrounding Melaleuca wetland
 S 33 51' 03.8" E 120 48' 56.3"

Figure 5:
 Transect 3 on northern boundary. Sand over granite with low heath surrounding Melaleuca wetland.



0 50 100 200 300 400
 Meters

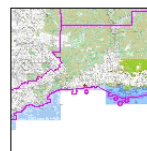
1:7,682



Projection: Universal Transverse Mercator
 MGA Zone 51, Datum: GDA84

Colours shown at 20 meters intervals
 Grid shown at 20000 meter intervals

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Legend

Trap lines
 Pit lines

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<i>Acacia cochlearis</i>	<i>Conothamnus aureus</i>	<i>Lechenaultia formosa</i>
<i>Acacia harveyi</i>	<i>Cryptandra pungens</i>	<i>Lepidosperma squamata</i>
<i>Acacia subcaerulea</i>	<i>Cyathochaeta equitans</i>	<i>Leptospermum sp.</i>
<i>Acacia gonophylla</i>	<i>Dampiera linearis</i>	<i>Leptospermum spinescens</i>
<i>Acacia cyclops</i>	<i>Daviesia incrassata</i> subsp. <i>reversifolia</i>	<i>Leucopogon conostephioides</i>
<i>Adenanthos cuneatus</i>	<i>Dianella revoluta</i>	<i>Leucopogon revolutus</i>
<i>Allocasuarina humilis</i>	<i>Dillwynia divaricata</i>	<i>Lyginia imberbis</i>
<i>Alyogyne wrayae</i>	<i>Dryandra cuneata</i>	<i>Melaleuca pentagona</i> ssp. <i>pentagona</i>
<i>Anarthria laevis</i>	<i>Eriochilus dilatatus</i>	<i>Melaleuca striata</i>
<i>Anarthria scabra</i>	<i>Eucalyptus pleurocarpa</i>	<i>Melaleuca tuberculatum</i> subsp. <i>macrophyllum</i>
<i>Anigozanthos rufus</i>	<i>Eucalyptus occidentalis</i>	<i>Melaleuca thymoides</i>
<i>Allocasuarina humilis</i>	<i>Gahnia trifida</i>	<i>Mesomelaena stygia</i> subsp. <i>stygia</i>
<i>Anarthria laevis</i>	<i>Gompholobium confertum</i>	<i>Mesomelaena tetragona</i>
<i>Anarthria polyphylla</i>	<i>Gompholobium knightianum</i>	<i>Microcorys barbata</i>
<i>Anarthria scabra</i>	<i>Gompholobium tomentosum</i>	<i>Neurachne alopecuroidea</i>
<i>Baeckea corynophylla</i>	<i>Hakea ruscifolia</i>	<i>Nuytsia floribunda</i>
<i>Banksia pulchella</i>	<i>Hakea sulcata</i>	<i>Oligarrhena micrantha</i>
<i>Banksia repens</i>	<i>Hakea dentata</i>	<i>Petrophile heterophylla</i>
<i>Beaufortia micranthera</i>	<i>Hakea trifurcata</i>	<i>Platysace effusa</i>
<i>Baumea juncea</i>	<i>Hakea corymbosa</i>	<i>Pultenaea empetrifolia?</i>
<i>Billardiera fusiformis</i>	<i>Hibbertia gracilipes</i>	<i>Schoenus curvifolius</i>
<i>Boronia spathulata</i>	<i>Hibbertia oligantha</i>	<i>Spyridium majoranifolium</i>
<i>Calothamnus gracilis</i>	<i>Hovea pungens</i>	<i>Stenanthemum notiale</i>
<i>Carpobrotus virescens</i>	<i>Hypolaena humilis</i>	<i>Stylidium piliferum</i>
<i>Cassytha micrantha</i>	<i>Isopogon trilobus</i>	<i>Stylidium rupestre</i>
<i>Caustis dioica</i>	<i>Isopogon polycephala</i>	<i>Synaphea reticulata</i>
<i>Chordifex laxus</i>	<i>Isopogon teretifolia</i>	<i>Taxandria spathulata</i>
<i>Chordifex spathulata</i>	<i>Jacksonia spinosa</i>	<i>Thomasia angustifolia</i>
<i>Conostylis seorsiflora</i>	<i>Lasiopetalum rosmarinifolium</i>	<i>Urodon dasphyllus</i>
<i>Cryptandra myriantha</i>	<i>Laxmannia ramosa</i>	<i>Xanthorrhoea platyphylla</i>

Appendix 7

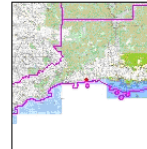
Transect 4 – Northern boundary
Melaleuca cuticularis swamp
 S 33 50' 43.4"
 E 120 49' 35.0"

Figure 6:
 Transect 4 on northern boundary. *Melaleuca cuticularis* swamp



0 60 120 240 360 480
 Meters 1:8,792

Projection: Universal Transverse Mercator
 MGRS Zone 51, Datum: GDA94



Legend

- Trap lines
- Pit lines

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 O'Brien, Director General, Department of
 Environment and Conservation

Green line shows 100m buffer to the road

Red line shows 100m buffer to the swamp

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Species Name	Species Name
<i>Acacia cyclops</i>	<i>Melaleuca cuticularis</i>
<i>Acacia harveyi</i>	<i>Melaleuca brevifolia</i>
<i>Acacia gonophylla</i>	<i>Melaleuca pentagona</i> subsp. <i>pentagona</i>
<i>Atriplex semibaccata</i>	<i>Sarcocornia blackiana</i>
<i>Baumea juncea</i>	<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>
<i>Chenopodium glaucum</i>	<i>Senecio quadridentatus</i>
<i>Cyperaceae</i> sp.	<i>Spyridium majoranifolium</i>
<i>Eucalyptus occidentalis</i>	<i>Suaeda australis</i>
<i>Gahnia trifida</i>	<i>Thomasia angustifolia</i>
<i>Kennedia prostrata</i>	<i>Villarsia parnassifolia</i>
<i>Lasiopetalum rosmarinifolium</i>	<i>Wilsonia rotundifolia</i>
<i>Leucopogon woodsii</i>	

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Appendix 8

Quadrat 1 – 20m x 20m

Banksia speciosa / *Eucalyptus pleurocarpa* scrub

S 33 52' 31.6"

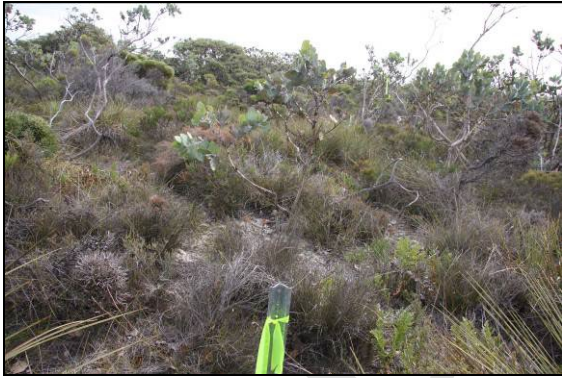
E 120 48' 49.5"



Vegetation Plot 1 - NW corner



Vegetation Plot 1 - NE corner



Vegetation Plot 1 - SE corner

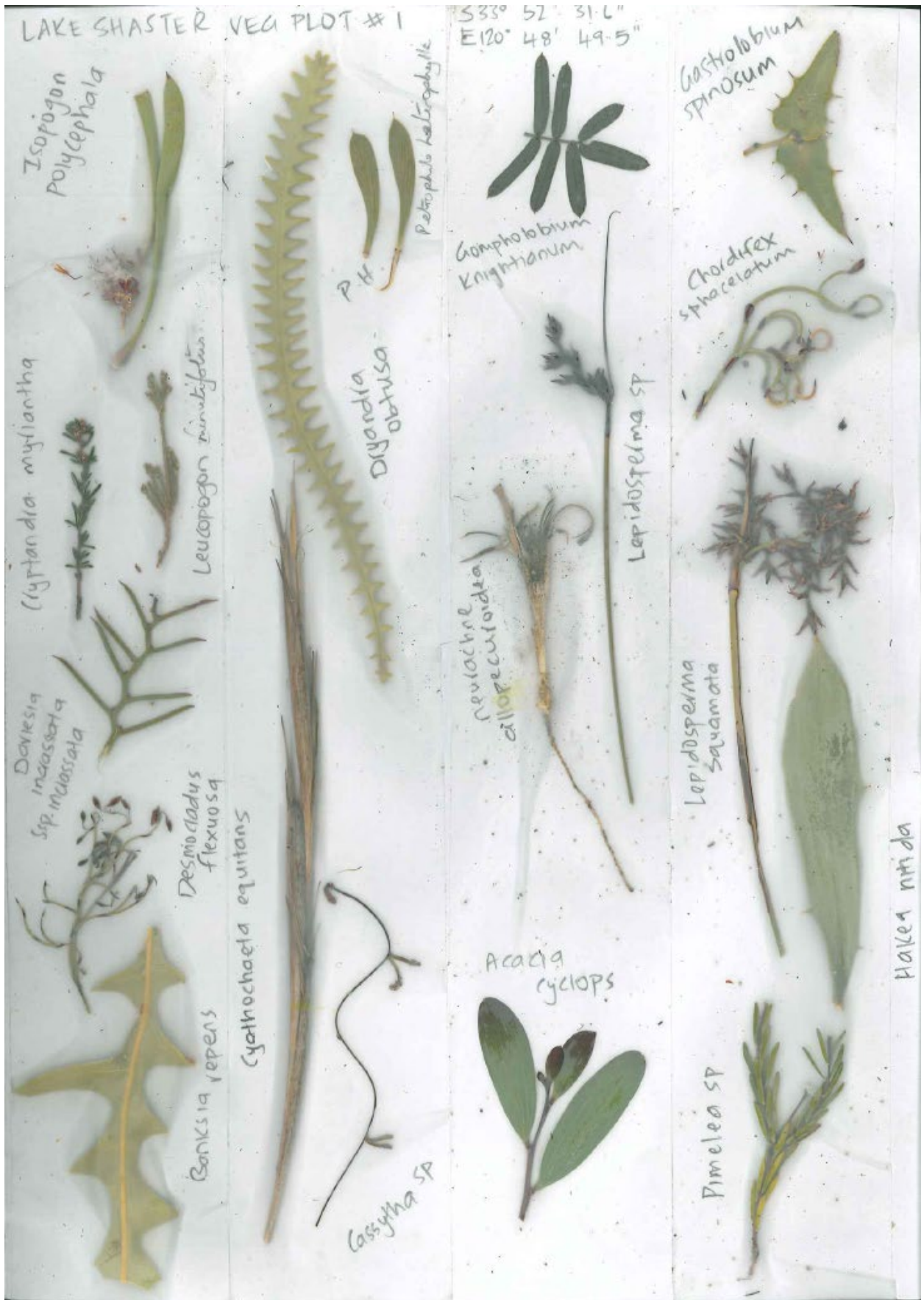


Vegetation Plot 1 - SW corner

May 2009



May 2009



May 2009

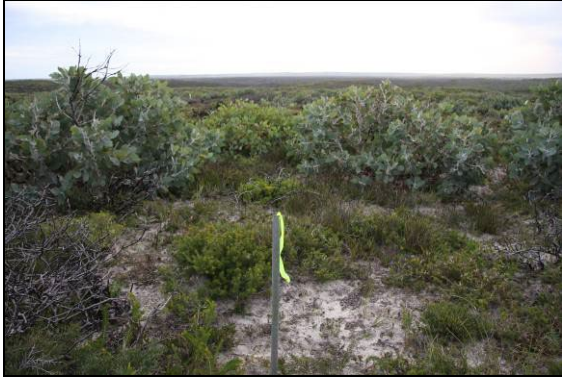
Appendix 9

Quadrat 2 – 20m x 20m

Dryandra nervosa / *Eucalyptus pleurocarpa* low heath
(Recovering post-fire 2006)

S 33 51' 22.6"

E 120 51' 32.8"



Vegetation Plot 2 - NW corner



Vegetation Plot 2- NE corner



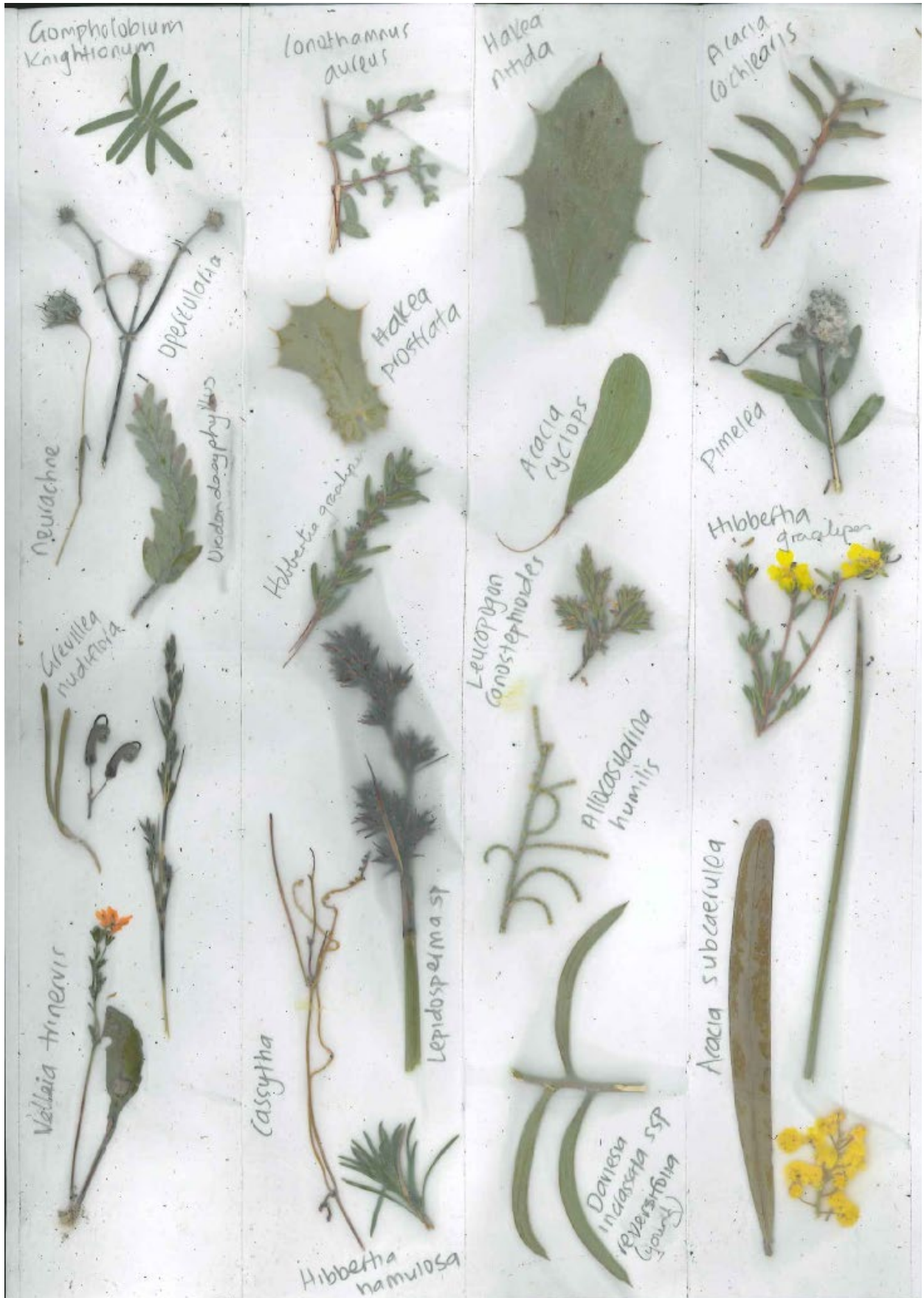
Vegetation Plot 2 - SE corner



Vegetation Plot 2 - SW corner



May 2009



May 2009

