

BUSHLAND PLANT SURVEY RECORDING SHEET 1 - use pencil only

BUSHLAND AREA Helena Valley Rd SITE NUMBER HELVD1

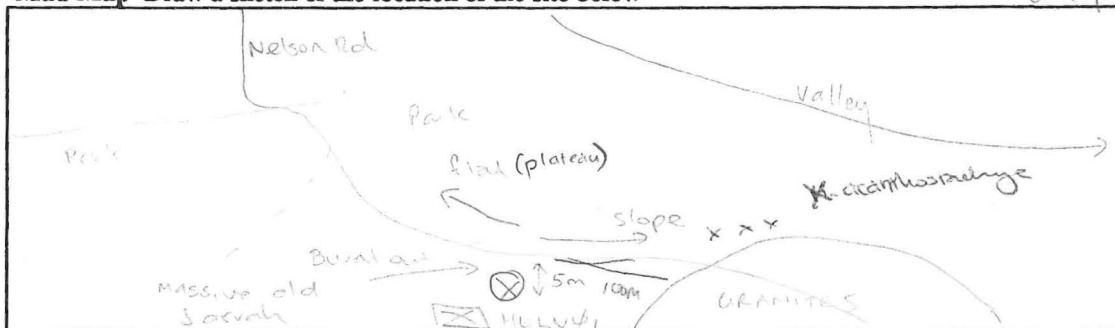
DATE TRIP 8-10-96 RECORDERS AM, ML & NG

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below



Road Location

Geographic Location Latitude 31 56 30.0 S Longitude 116 05 34.9 E Altitude 210m
GPS ☒ Accuracy
Map Sheet MUNDARING PDOP = 3.4

Photograph Name Number #36 R2

Topographic Position (Circle the correct response)
Upland 5 Lower slope
Upper slope
Midslope Valley
Washline

2. SITE DATA Circle the correct response

Slope flat gentle steep Aspect N NE E SE S SW W NW

Surface Soil gravelly Depth to Rock 0-20cm Colour orange

Exposed Rock type laterite % surface cover 15% size range 2-20cm

Litter 80 % surface cover Depth (cm) 10-20cm

Bare Ground 5 % surface cover

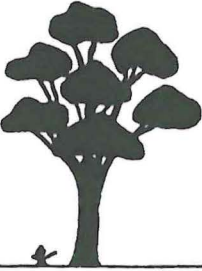
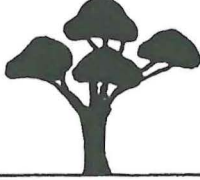
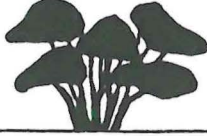
Adapted from 'Bushland Plant Survey' written by B. Keighery (1994) and published by Wildflower Society of WA (Inc). PO Box 64 Nedlands WA 6008

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Mulr)- use pencil only

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class 2-10% 10-30% 30-70% over 70%

TREES				MALEES	
	over 15m	5-15m	under 5m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)	2-10% 10-30%	10-30%	2-10%		
DOMINANT SPECIES	<i>E. marginata</i>	<i>E. marginata</i> <i>E. calophylla</i>	<i>E. calophylla</i> (saplings)		

SHRUBS add canopy = 30-70% cover				SHRUBS	
	over 2m	2m - 1.5m	1.5 - 1m	1 - 0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)		2-10%	10-30%	30-70%	30-70%
DOMINANT SPECIES		<i>H. undulata</i> <i>A. humilis</i>	<i>H. amplexicaulis</i> <i>L. sphaerocarpa</i>	<i>H. robustum</i> <i>L. sphaerocarpa</i> <i>H. viscidifolia</i>	<i>A. alata</i> <i>Adenanthos barbigerus</i> <i>Dry. nivea</i>

GRASSES		HERBS		SEDGES	
				over 0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)		2-10%	30-70%		
DOMINANT SPECIES		<i>Scorod. platyphylla</i> <i>Convolv. setosa</i>	<i>Leptospermum angustatum</i>		

4. VEGETATION CONDITION

Comments

4-14 1/2

• Good upland forest - forest
old trees in stand - some history of fire
NO weeds

205

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELV01

Record on Sheet

Date 8.10.96

8.12.96(R)

• Column 1 plant name

• Column 2 plant number

• Column 3 flowering time- TICK if species flowering

• Column 4 identification check

TREES	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
<i>Euc. calophylla</i>	✓	-	-	<i>Astroloma pallidum</i> ?			✓	<i>Lomandra brittanii</i>	✓	✓	✓
<i>Euc. marginata</i>	✓	-	-	<i>Lechenaultia biloba</i>	✓		✓	<i>Lomandra nigricans</i>	✓	✓	✓
SHRUBS				<i>Phyllanthus calycinus</i>	✓		✓	<i>Cassipoua pomifera</i>	✓	✓	✓
<i>Isopogon sphaerocarpus</i>	✓	-	-	<i>Conostylis setosa</i>	✓		✓	<i>Lomandra sericea</i>	✓	✓	✓
<i>Adenanthos barbigera</i>	✓	-	-	<i>Trichoclina spatulata</i>	✓		✓	<i>Tetralochea setigera</i> (id=✓)	✓	✓	✓
<i>Hakea undulata</i>	✓	-	-				✓	<i>Thysanotus spartea</i>	✓		✓
<i>Hakea pinnatifida</i>	✓	-	-	<i>Stylidium schenoides</i>	✓		✓	<i>Pterostylis pygmaea</i>	✓		✓
<i>Acacia alata</i>	✓	✓	✓	<i>Anthopodium capillipes</i>	✓		✓	<i>Pronaqa fraseri fraseri</i>	✓		✓
<i>Hibbertia subvaginata</i>	✓	✓	✓	GRASSES				<i>Scaevola pilosa</i>	✓		✓
<i>Acacia barbinervis</i>	✓	✓	✓	<i>Stipa</i> sp. <u>indet</u>	✓	✓	✓	<i>Pentapeltis peltigera</i>	✓		✓
<i>Hovea trisperma</i>	✓	✓		<i>Danthonia</i> sp (sterile)	✓	✓	✓	<i>Haemodorum</i> sp. <u>sterile, idet</u>	✓		✓
<i>Acacia pulchella pulchella</i>	✓	✓	✓	<i>Amphipogon turbinatus</i>	✓	✓	✓	<i>Lepervanthus serratus</i>	✓		✓
<i>Hovea chorizemifolia</i>	✓	✓	✓	<i>Neurachne abopocrotides</i>	✓		✓	<i>Pterostylis recurva</i>	✓		✓
<i>Grevillea synaphea</i>	✓	✓	✓					SEDGES			
<i>Styphelia tenuifolia</i>	✓	✓	✓					<i>Tetraria capillaris</i>	✓	✓	✓
<i>Hibbertia lucetii</i>	✓	✓	✓								
<i>Daveia preissii</i>	✓	✓	✓	HERBS							
<i>Astroloma ciliatum</i>	✓	✓	✓	<i>Pterostylis habuoides</i>	✓	✓	✓	<i>Microphyllum</i> sp? on leaf??			✓
<i>Hovea trisperma</i>	✓	✓		<i>Stylidium junceum</i>	✓	✓	✓	<i>Pterostylis barbata</i>	✓		✓
<i>Daveia rhombifolia</i>	✓	✓	✓	<i>Stylidium amoenum</i>	✓	✓	✓	<i>Thelymitra benthamiana</i>	✓	✓	✓
<i>Boronia ornata</i> (id=✓)	✓	✓	✓	<i>Scaevola calyptera</i>	✓	✓	✓	<i>Thelymitra crinita</i>	✓	✓	✓
ADS: <i>Daveia longifolia</i>	✓	✓	✓	<i>Stylidium calcaratum</i>	✓	✓	✓	<i>Cyanicula sericea</i>	✓	✓	✓
<i>Gompholobium ovatum</i>	✓	✓	✓	<i>Hydrocotyle callicarpa</i>	✓	✓	✓	<i>Haemodorum laxum</i>	✓	✓	✓
<i>Hibbertia communata</i>	✓	✓	✓	<i>Homallosiadia homalocarpum</i>	✓	✓	✓	<i>Lomandra asperitosa</i>	✓	✓	✓
<i>Hakea ruscifolia</i>	✓	-	-	<i>Leptocarpus pusilla</i>	✓	✓	✓	<i>Thysanotus tenuifolius</i>	✓	✓	✓
<i>Alloc. humilis</i>	✓	-	-	<i>Mitella tenuifolia tenuifolia</i>	✓	✓	✓	<i>Dampiera linearis</i>	✓		✓
<i>Hypo. robustum</i>	✓	-	-	<i>Platysace compressa</i>	✓	✓	✓	<i>Chaenactis composita</i>	✓		✓
<i>Day. lindleyana lindleyana</i>	✓	-	-	<i>Haemodorum</i> sp. <u>indet</u>	✓	✓	✓	<i>Orthocentrus latus</i>	✓		✓
<i>Labichea punctata</i>	✓	-	-	<i>Haemodorum</i> sp. <u>narrow leaf</u>	✓	✓	✓	<i>Drosera pallida</i>	✓		✓
<i>Daveia decurva</i>	✓	-	-	<i>Caesia micrantha</i>	✓	✓	✓	<i>Daveia erythroliza</i>	✓		✓
<i>Hibbertia hypoleucoidea</i>	✓	-	-					<i>Pterostylis occidentalis</i> (sterile)	✓		✓

early id

late leaf

NE *Acacia willdenkiana*??

LA *alata*?

✓ *Pterostylis* sp. need id

✓ *Trachymene pilosa*

✓ *Stylidium hispidum*

✓

✓ *Daveia erythroliza*

✓ *Pterostylis* sp. occidentalis (sterile)

✓ *Haemodorum discolor*

✓

Proteaceae	Grevillea	hakeoides x thelemanniana	subsp.
Rutaceae	Diplolaena	grandiflora x mollis	
Scrophulariaceae	Stemodia	cf. viscosa	
Stylidiaceae	Stylidium	sp. nov.	

InfrName

helmsii x oligophylla

sclerosperma

ssp. lineare

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No HELVØ1

Date 8.10.96

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

stylid. junceum no basal rose-fls. white flws.

Hibb. subvaginata

TREES	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
E. calophylla ✓				Astroloma sp. pallidum colletum?				Cassipouia racemosa	✓		
E. marginata ✓				Dampiera alb. linearis	✓			Lomandra serricata			
prop. shrubs				Lechenaultia boltonii	✓			Pterostylis b. ? barbata (2 specimens)			
Isopogon sphaerophylla	✓			Chaenactis corymbosa				Pterostylis sp. ?			
Adiantum barbatum	✓			Habenaria chlorizans folia	✓			Anthyris capillipes			
MALLEES H. undulata	✓			Orthrosanthus latis	✓			Pterostylis occidentalis ? (NF)	✓		
H. duplexicaulis	✓			Pracacophyllus sp? one leaf				Phyl. cal.	✓		
H. vasc. folia	✓			Drosera pallida - white flws /				Lomandra nigricans	✓		
Allox. humilis	✓			GRASSES				Lomandra ? sterile	✓		
Hypocalymma robusta	✓			Haemodorum sp. strap leaf	✓			caespitosa / micrantha			
SHRUBS				Anthyris turbinatum				Stylidium ? amaran.			
Tetralix hirsuta	✓			Haemodorum terete leaf	✓			glabrous, fleshy leaves			
Dry. nivea	✓			Neuradine alopecuroides	✓			SEDGES			
Scaevola ? platyphylla	✓			Phacelia				Lepidosperma ? angustatum	✓		
Gomph. / clay ? decid.				Cryptostylis ? - decid. id.				Lepidosperma terete scabrous	✓		
Inflated flws	✓			Unid. orch. sp. Thelypoda (NF)				Lepidosperma terete smooth	✓		
Lobelia punctata				Danthonia ? sp?	✓			Lomandra sp?	✓		
Davesia sp. sp. ? precisii	✓			HERBS							
Davesia decurrens	✓			Pterostylis babingtonii	✓			Stylidium calcareum			
Davesia chondrioides				Caesia ? micrantha	✓			Opercularia hispidula			
Hibb. hypericoides	✓			Thysanotus ? small; leafless in bud - on tree leaf	✓			Melilot sp.			
Medulla synanthra	✓			Platysacae sp. ? compressa				Hedyotis sp.			
sp. stylidia tenuifolia	✓			Conostylis setosa	✓			Platysacae sp. (seedlings)			
Boragin. ovata ovata	✓			Tricostema spatulatum	✓			Levenhookia sp.			
Hibb. huegii	✓			Pentapetis patigera	✓			Lomandra sp. hermaphrodite	✓		
Acacia alata (heavy)	✓			Stylidium strobiloides				Leptochloa capillaris	✓		
Acacia bairdiana	✓			Drosera erythrorhiza				Tradymene pilosa			
Acacia Willdonkiana	✓			Tridymia sp (in flower)				Stylidium piliferum	✓		
Acacia pulchella (stalled)	✓			Pterostylis pygmaea	✓						
FFN				Stylidium junceum	✓						
Hibb. commutata				Hibb. subvaginata	✓						

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5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVØ1

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering *check peas collected*
- Column 4 identification check

Date 24.12.96

Recore

[illegible]

BUSHLAND PLANT SURVEY RECORDING SHEET 1 - use pencil only

BUSHLAND AREA Helena valley Nelson Rd ^{- off} SITE NUMBER HELV02

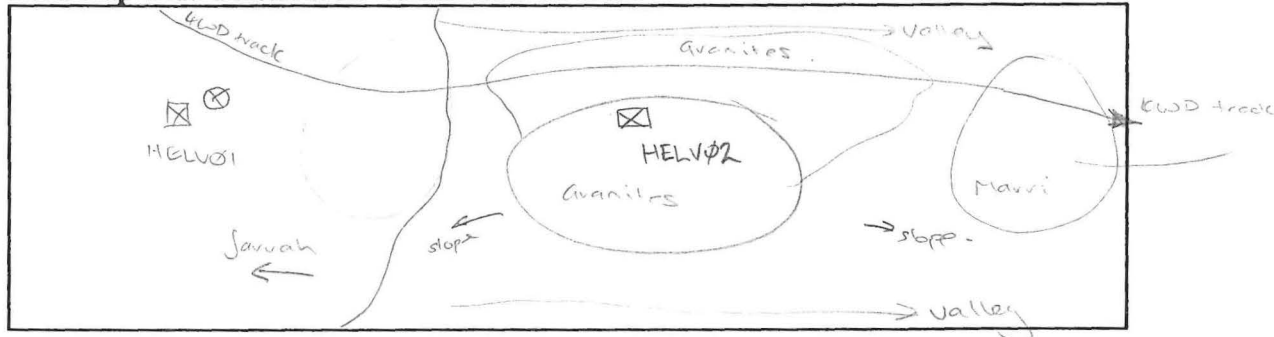
DATE TRIP 8.10.96 RECORDERS AM, ML & NG

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below



Road Location off Nelson Rd

Geographic Location Latitude 31 56 35.1 S Longitude 116 05 43.8 E Altitude —
GPS ☒ Accuracy PDOP - 4.4 (5.6 sat)
Map Sheet MUNDARING

200m

Photograph Name _____ Number #1 Roll #3

Topographic Position (Circle the correct response)
☒ Upland ☐ Lower slope
☐ Upper slope ☐ Valley
☐ Midslope ☐ Washline

2. SITE DATA Circle the correct response

Slope ☒ flat ☐ gentle ☐ steep ¹⁵ Aspect ☒ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ^{26° NNE = 1.3}

Surface Soil gritty 103M Depth to Rock 0-30 cm Colour pk & med B-ocor

Exposed Rock type granite % surface cover 40 size range 52m - 0.5cm

Litter 20 % surface cover _____ Depth (cm) 5cm

Bare Ground 40 % surface cover _____

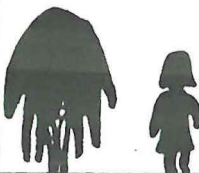
1.2% rocks - 10% (content)

Adapted from 'Bushland Plant Survey' written by B. Keighery (1994) and published by Wildflower Society of WA (Inc). PO Box 64 Nedlands WA 6008

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Mulr)- use pencil only

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below), and dominant species in each layer.

Cover Class		2-10%	10-30%	30-70%	over 70%
TREES over 15m 5-15m under 5m MALLEES over 8m under 8m					
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					
SHRUBS over 2m 2m - 1.5m 1.5 - 1m 1-0.5m SHRUBS under 0.5m 0.5m 2m 1m					
LIFE FORM					
COVER CLASS (%)			>70%	30-70%	
DOMINANT SPECIES			<i>X. praeii</i> <i>C. quadrifidus</i> <i>H. cristata</i>	<i>D. citriodora</i> → <i>Mitabelia spirata</i> <i>H. distata</i> → <i>A. pulchella</i> (FEM)	
GRASSES HERBS SEDGES over 0.5m under 0.5m					
LIFE FORM					
COVER CLASS (%)		>70%			
DOMINANT SPECIES		<i>Eurychorda sphaerophylla</i>			

4. VEGETATION CONDITION

Comments Granite hearth between 2 exposed granites.
4% $\rightarrow$ Biya & detrit

1.52
2.0

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HEL02

Record on Sheet

Date 8.10.96

4.12.96 (R)

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

WETLAND SHRUBS	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
ADS: Xanthorrhoea acanthostachya	✓		R					Cassytha pumiformis	✓	✓	R
ADS: Verticordia acerosa	✓							Actinotus leucocephalus	✓	✓	R
Grevillea pilulifera	✓							Conostylis setigera	✓	✓	R
W: Protea alata	✓							Isotoma hypochaeritiformis	✓	✓	R
ADS: Protea laurifolia	✓							Thysanotus manglesianus	✓	✓	
(W:)								Wahlenbergia preissii	✓	✓	
Hibbertia aurea	✓		R					Jacksonia alata	✓	✓	R
Cryptandra arbustiflora	✓	✓	R					Levenhookia stipitata	✓	✓	R
Leucopogon pulchellus	✓		R	GRASSES							
Grevillea pilulifera	✓	✓	R	Neurachne alopecuroides	✓		R	Hyalosperma cotula	✓	✓	R
Calamagrostis quadrifida	✓		R	Vulpia bromeliodes	✓	✓	R	Centropogon aristata	✓	✓	
Trinailia pedunculata	✓		R	Stipa compressa	✓	✓	R	Drosera peltata	✓	✓	R
Pinalea intricata v. peligera	✓	✓	R	Braea maritima	✓		R	Pterostylis recurva	✓	✓	R
Hibbertia subvaginata	✓		R	Avena canyaplyllean	✓		R	SEDGES			
Acacia pulchella	✓	✓	R					Schoenus nanus	✓	✓	R
Synaphea sp. (seedling)	✓							Lepidobolus preissianus	✓	✓	R
(ADS: Melaleuca vancei)	✓			HERBS							
Acanthocarpus preissii	✓										
Mitella spinosum	✓		R	Levenhookia pusilla	✓	✓	R				
Flourea pungens	✓	✓	R	Mitella tenuifolia tenuifolia	✓	✓	R				
Hibbertia acerosa	✓	✓	R	Pterochaeta paniculata	✓	✓	R	Eriochilus pallidus	✓	✓	
NBMC: dilatata	✓	✓	R	Hydrocotyle calicarpa	✓	✓	R	Stylidium dichotomum	✓	✓	
Trinailia citriodora	✓		R	Thysanotus manglesianus	✓	✓	R	Stypandra glauca	✓	✓	R
Xanthorrhoea preissii	✓		R	Stylidium brunonianum	✓	✓	R	Hypochaeris glabra	✓	✓	R
Halimolobos cristata	✓		R	Tripterococcus brunonis	✓	✓	R	Drosera glandulifera	✓	✓	
Phyllanthus calycinus	✓		R	Laxmannia squarrosa	✓	✓	R	Borja sphaerocephala	✓	✓	R
Baeckea camphorosmae	✓		R	ADS: Hyalosperma denissum	✓						
Petrophile biloba	✓		R	ADS: Pterochaeta paniculata	✓						
Synaphea sp. glauca	✓			Goodenia fasciculata	✓	✓	R	Drosera pygmaea sp.	✓	✓	
Calyx glutinosa	✓		R	Mitella griffithioides	✓		R				
Isopogon dubius	✓		R	Trachypogon coerulea	✓	✓	R				

(NOT ON RESERVE)

sand	-.25 *	.27 *	-.45 ***	-.13 *	-.26 **	-.27 **	.01	-.22 *	-.01	.27 **	.28 ***	.26 **
silt	.27 *	-.26 *	.48 ***	.25 **	.18 *	.18 *	.15	.26 **	.17	-.29 ***	-.23 *	-.29 ***
clay	.21 *	-.23 *	.39 ***	.08 *	.24 **	.25 **	-.04	.17 *	-.03	-.21 *	-.25 **	-.20 *
C	-.22 *	.17	-.25 **	-.41 ***	-.27 ***	-.26 **	-.26 **	-.47 ***	-.22 **	.43 ***	.55 ***	.57 ***
N	-.17	.12	-.05	-.14	-.30 ***	-.31 ***	.01	-.25 **	.06	.23 **	.37 ***	.30 ***
P	-.18	.16	.32 ***	.26 **	.03	.01	.23 **	.23 **	.29 ***	-.31 ***	-.17	-.24 **
P_HCO3	.19	-.16	.25 **	.18 *	-.11	-.14	.23 **	.10	.32 ***	-.29 ***	-.02	-.11
K_HCO3	.32 **	-.31 **	.45 ***	.38 ***	.05	.01	.34 ***	.34 ***	.38 ***	-.43 ***	-.26 **	-.34 ***
Ca_HCO3	-.22 *	.20	-.12	-.09	-.45 ***	-.44 ***	.13	-.25 **	.19 *	.29 **	.42 ***	.35 ***
CEC	.11	-.13	.03	.07	-.20 *	-.23 *	.17	-.04	.23 *	-.01	.16	.07
exCa	-.06	-.09	-.05	-.04	-.28 ***	-.28 ***	.10	-.16	.15	.13	.31 ***	.21 *
exNa	.05	-.06	.13	.02	-.09	-.11	.08	-.01	.11	-.12	.08	.02
exK	.29 **	-.29 **	.46 ***	.34 ***	.06	.03	.31 ***	.30 ***	.35 ***	-.41 ***	-.23 **	-.33 ***
exMg	.33 **	-.31 **	.22 *	.22 *	-.05	-.07	.23 **	.15	.28 ***	-.29 ***	-.06	-.18 *
Alt	.23 *	-.24 *	-.00 .950	.02	.58 ***	.63 ***	-.27 ***	.28 ***	-.38 ***	-.04 ***	-.35 ***	-.24 **
Lat	-.07	.07	-.17 *	-.69 ***	.15	.17 *	-.83 ***	-.45 ***	-.81 ***	.16	.26 **	.33 ***
Long	.41 ***	-.39 ***	.20 *	.16	.80 ***	.79 ***	-.12	.39 ***	-.20 *	-.45 ***	-.57 ***	-.52 ***

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVØ 2

Record on Sheet

- Column 1 plant name

- Column 2 plant number

- **Column 3** **flowering time-** TICK if species flowering

- **Column 4** **identification check**

Date 4.12.96

Nescoe

[illegible]

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	HELVØ2
Date	8.10.96

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

TREES	SHRUBS	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
Cela. quadrifidus		V		/	Leucopogon sp. (pulcherrimus)	V		/	Melothia sp.	V		/
Darwinia citriodora		V		/	Acacia pulchella	V		/	Hydrocotyl- sp			/
Xan. preissii		V			Cassipoua sp.	V		/	Annual Schoenus -			/
Halen avistata		V			Calyptix glutinosa	V		/	Biza maxima	V		/
Nirbelia spiratum/spinosens?		V		/	Styphandra vulgaris glauca	V		/	Aiva canophyllae	V		/
Hibb. subvaginatum		V		/	Hypochaeris globosa	V		/	Step Stipa sp? very small			/
MALLEES					Drosera grandiligera				Vicia distida	V		/
Houma purgens		V		/	Ursinia mlleroides	V		/				/
Nemcia sp.		V		/	GRASSES				Leavenworthia sp. pusilla	V		/
Ruf caliginus		V		/	bea Waitzia paniculatum	V		/	Trachymene coccinea			/
Baeckea conchocarpa		V		/	Laxmannia squarrosa	V		/	Cryptandra tubiflora			/
SHRUBS					Leopogon glutinosus				Trachymene seedling hairy			/
Androsia fasciculata		V		/	Neurochmel alopecuroides	V		/	Actinotus			/
Tymalium ledifolium		V		/	Pterosiphilis ? → serotous				SEDGES			/
Petrophylla biloba		V		/	Stylidium				Tetrastichia ciliolata			/
Ra					Eriochilus dilatatus			/	Lepidosperma vicioides			/
Ursinia anthemoidea		V		/	Stipa? compressa			/	Lepidosperma frute scabrid			/
Trypterocarpos hirsutus		V		/	HERBS				Adiant? Lepidobolus	V		/
Synedra sp. grisea		V		/	Styphandra glauca	V		/	brodiaea fl. woods			/
Kyalospermum rotund				/	Pargaea sphziorcephala	V		/				/
Grevillea pilulifera? NE				/	Drosera pallida			/	ADJACENTS			/
Hibbertia aurea		V		/	Conostylis setigera	V		/	Xan. branthiostachya			/
NE Stackhouseia sp.		?		/	Stylidium brunianum			/	Horicondia acerola			/
Pimelia ciliatum		V		/	S. bulbiferum ? - S. dichotomus			/	Waitzia paniculatum			/
Rhodantha aff lewis.		V		/	Thysanotus longilegiatus	V		/	Grevillea pilulifera			/
1 seedling									Jacksonia alba			/
Baeckea conchocarpa		V		/					Androsia ciliata			/

BUSHLAND PLANT SURVEY RECORDING SHEET 1 - use pencil only

BUSHLAND AREA Helena Valley ^{+ from pipeline} SITE NUMBER HELV03

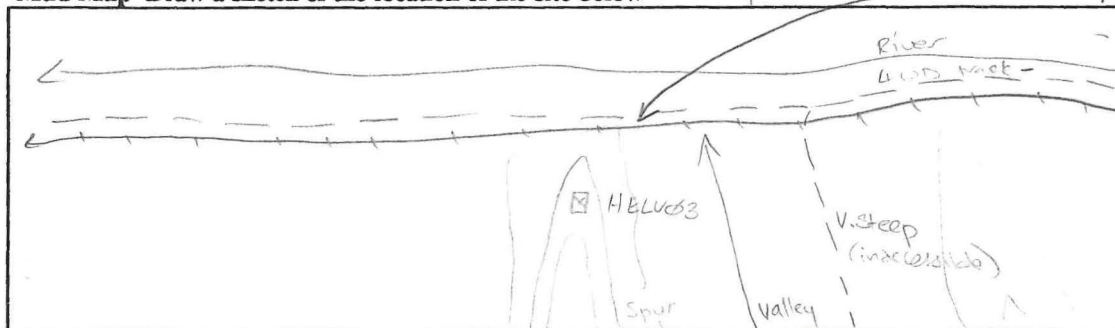
DATE TRIP 9-10-96 RECORDERS AM, ML & LM

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below



Road Location

Geographic Location Latitude 31° 56' 41.9" S Longitude 116° 06' 10.8" E Altitude 70m
GPS ✓ Accuracy (5-6)
Map Sheet MUNDARING HDOP 1.9 SATS 4

Photograph Name Number # 2 Red # 3

Topographic Position (Circle the correct response)
Upland Lower slope
Upper slope Valley
Midslope Washline

2. SITE DATA Circle the correct response

Slope flat gentle steep Aspect N NE E SE S SW W NW

Surface Soil clayey loam Depth to Rock > 100 cm Colour Red-brown

Exposed Rock type dolerite % surface cover 10% - 15% size range 20 cm - 1.5 m

Litter > 80 % surface cover Depth (cm) 10 - 30

Bare Ground > 1 % surface cover

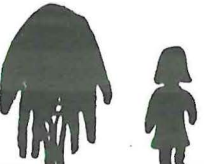
Adapted from 'Bushland Plant Survey' written by B. Keighery (1994) and published by Wildflower Society of WA (Inc). PO Box 64 Nedlands WA 6008

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Mulr)- use pencil only

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

	TREES			MALLEES	
	over 15m	5-15m	under 5m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)		10-30%			
DOMINANT SPECIES		<i>E. laevis</i> (1°)			
		<i>E. calophylla</i>			
		<i>E. wandoo</i>			

	SHRUBS			SHRUBS	
	over 2m	2m - 1.5m	1.5 - 1m	1 - 0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)		>70%		30-70%	
DOMINANT SPECIES		<i>Try. flavibundum</i>		<i>M. neidixi</i>	<i>Plu. calycinus</i>
		<i>Acex. dumosus</i>		<i>Xm. preissii</i>	<i>Dawsonia citriodora</i>
		<i>Xm. preissii</i>			

	GRASSES	HERBS	SEDGES	over 0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)		10-30%	30-70%		
DOMINANT SPECIES		<i>Styranda glauca</i>	<i>Loxocarya flexuosa</i>		
			<i>Lepidosperma terete</i>		
			<i>S. ortho</i>		

4. VEGETATION CONDITION

Comments $3\frac{1}{2} \rightarrow 4$ - *Watsonias* starting to invade plot.
 $4 \rightarrow$ since most of Valley sites have been invaded by *Watsonia*. U/storey is still intact.

2.5

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIFIC PRESENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELV03

Record on Sheet

- Column 1 plant name

Date L 8.10.96

- Column 2 plant number

4.12.96(R)

• **Column 3** **flowering time-** TICK if species flowering

- **Column 4** **identification** **check**

TREES	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
Euc. laeliae	✓	✓	✓					Cassipouia glabella	✓	✓	✓
Euc. calophylla	✓		✓					Ptilotus mangleriianus	✓	✓	✓
Euc. wandoo	✓		✓					Cheilanthes austrotenuifolia	✓		
								Conespermum ciliatum	✓	✓	✓
SHRUBS								Thysanotus dichotomus	✓	✓	✓
Macropidia reedii	✓	-	✓					Lomandra caespitosa	✓	✓	✓
Darwinia citriodora	✓	-	✓					Tricoryne elatior	✓	✓	✓
Xanthorrhoea preissii	✓	-	✓					Anthocercis gracilis	✓	✓	✓
Hemigenia incana	✓	-	✓	GRASSES				Haemodorum sp.	✓	✓	✓
Calothamnus quadrifidus	✓	-	✓	Stipa pycnostachya	✓	✓		Stylidium affine	✓	✓	✓
Acacia alata	✓		✓	Avena sp.	✓	✓	✓	Diuris brumalis	✓	✓	
SHRUBS				Tetrarrhena laevis	✓	✓	✓	Stylidium bulbiferum	✓	✓	✓
Trinathia floribundum florib.	✓	✓	✓	Stipa elegantissima	✓	✓	✓	SEDGES			
Hibbertia hypericoidea	✓	✓	✓	Aira calophylla	✓	✓	✓	Schoenus unispiculatus	✓	✓	✓
Kennedia stirlingii	✓	✓	✓	Biza minor	✓	✓		Dermocladius aspera	✓	✓	✓
Grevillea pimeleoides	✓	✓	✓	Tetrarrhena abopecuroidea	✓		✓				
Daviesia horrida	✓	✓	✓	Biza maxima	✓		✓				
Synaphea pinnata	✓	✓	✓	Tetrarrhena laevis			✓				
Darwinia hymenoides	✓	✓	✓	HERBS							
Leucopogon capitellatus	✓	✓	✓	Centrolepis drummondiana	✓	✓	✓	Pelagonium littorale	✓	✓	✓
Pronaphra fraseri fraseri	✓	✓		Linum trigynum	✓	✓	✓	Thelymitra crinita	✓	✓	✓
Pimelea argentea	✓	✓		Caesia micrantha	✓	✓		Haemodorum sp. as HELVETI	✓	✓	✓
Pimelea sylvestris ? (miss)	✓			Wahlenbergia preissii	✓	✓	✓	Pelagonium austral. - drake	✓	✓	✓
Phyllanthus calycinus	✓		✓	Burchardia congesta	✓	✓	✓	Centaurium erythraea	✓	✓	✓
Hakea cristata	✓		✓	Anthropodium capillipes	✓	✓	✓	Dioscorea hirtifolia	✓	✓	✓
Nomadia lasiopetalum	✓		✓	Thysanotus mangleriianus	✓	✓	✓	Styphandra glauca	✓	✓	✓
Xanthorrhoea gracilis	✓		✓	Oreocaularia apiculiflora	✓	✓	✓	Natania melina	✓	✓	✓
Gompholobium marginatum	✓		✓	Centaurium erythraea	✓	✓	✓	Stackhousea monogyna	✓	✓	✓
Hakea lissocarpa	✓	-	✓	Oralis perennans	✓	✓	✓	Orthrosanthus laxus	✓	✓	✓
				Hydrocotyle callierypa	✓	✓		Stylidium Drummondianum	✓	✓	✓
				Hemaria flaccida	✓	✓	✓	Sordus pleuraeus	✓	✓	✓
Lasiopetalum bracteatum	✓	✓	✓	Romulea rosea	✓	✓	✓				

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVØ3

Record on Sheet

- Column 1 plant name

Date 4.12.96

- Column 2 plant number

• **Column 3** **flowering time-** TICK if species flowering

- **Column 4** **identification** **check**

[illegible]

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVO3

Record on Sheet

Date 8-10-96

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

E. laevis
small mallee with (5m)
small leaves & white powdery bark

TREES	No	FI	ID	SHRUBS (cont.)	No	FI	ID	HERBS (cont.)	No	FI	ID
<i>E. calophylla</i>	✓			<i>Daviesia harrida</i> (?)			✓	<i>Gompholobium marginatum</i>	✓		✓
<i>E. woodoo</i>	✓			<i>Stachys monogyna</i>	✓			Strap-leaf <i>Haemodorum</i>	✓		✓
<i>E. laevis</i> (<i>E. laevis</i>)	✓			<i>Orthrosaxus laxus</i>	✓			<i>Cassylia glabella</i>	✓		✓
SHRUBS				<i>Thomasia</i> sp (inid)	✓			<i>Haemodorum strap leaf</i>	✓		✓
<i>Trinailium floribundum</i>	✓		✓	<i>Kennedia coccinea</i> ?	✓		✓	<i>Hemerium placidum</i>			✓
<i>Macrotia reidii</i>	✓		✓	<i>Oxalis</i> sp - warm fruit	✓		✓	(cage tulip)			
MALLEES				<i>Hibb hypericoides</i>			✓	<i>Oxalis</i> sp - Divis? post flowering			
<i>Grevillea pimelioides</i>	✓		✓					<i>Oxalis</i> sp.	✓		✓
<i>Darwinia</i> sp	✓		✓	GRASSES				<i>Halen visseriana</i>	✓		✓
<i>Darwinia citriodora</i>	✓		✓	<i>Neuvachne glaucoides</i>	✓			<i>Hibb hypericoides</i>	✓		✓
<i>Burchardia congesta</i>	✓		✓	<i>Thymelaea</i> sp				<i>Tetrachena laevis</i>	✓		✓
SHRUBS				<i>Amelanthus australensis</i>	✓			<i>Acacia alata</i>	✓		✓
<i>Xan preissii</i>	✓		✓	<i>Caesia</i> sp (as in HELVO2)			✓	<i>Thysanotus divaricatus</i>	✓		✓
<i>Dioscorea hastiflora</i>	✓		✓	<i>Stipa</i> sp (infor)			✓	SEDGES			
<i>Hemicaria incana</i>	✓		✓	(ded. hairy rachis)				<i>Loxocarya flexuosa</i>	✓		✓
<i>Calathea quadrifida</i>	✓		✓	<i>eliganisma</i>				<i>Tricoryne elatior</i>	✓		✓
<i>Acacia alata</i>	✓		✓	<i>Thysanotus sparsa</i>				<i>Briza minor</i>	✓		✓
<i>Pimelia sylvestris</i>	✓		✓	HERBS				<i>Tenete leaf smooth</i> <i>Lepidosperma</i>	✓		✓
<i>Styphandra glauca</i>	✓		✓	<i>Stylidium affine</i>	✓		✓	<i>Philotus mangrovei</i>	✓		✓
<i>Phyl. calycinus</i>	✓		✓	<i>Briza maxima</i>	✓		✓	<i>Sonchus oleraceus</i>	✓		✓
<i>Watsonia mirellii</i> (orange)	✓		✓	<i>Stylidium bulbiferum</i>			✓	<i>Lomandra</i> sp (sterile)	✓		
<i>Halen aistata</i>	✓		✓	<i>S. brunneum</i>	✓		✓	<i>Stylidium</i> <i>Hydrophyllum</i>			
<i>Thomasia</i> sp (heart leaf)								<i>Briza minor</i>	✓		
<i>Thysanotus mangroveanus</i>	✓		✓	<i>Operculatia</i> sp (?)	✓		✓	<i>Arct. caespitosa</i>	✓		✓
<i>Arthropodium callipao</i>	✓		✓					<i>Luzulaea sp. ?</i>	✓		✓
<i>Xan. gracilis</i>	✓		✓	<i>Oes. Pedicularis</i> ?			✓				
<i>Synedrella pinnae</i>	✓		✓	<i>Centrolepis drummondii</i> ?	✓		✓				
<i>Aster. Astroloma</i> sp. (NF)	✓		✓	<i>Anthracocis gracilis</i> ?	✓		✓				

(NF)

BUSHLAND PLANT SURVEY RECORDING SHEET 1 - use pencil only

BUSHLAND AREA Helena Valley ^{+ near pipeline track} SITE NUMBER HELV04

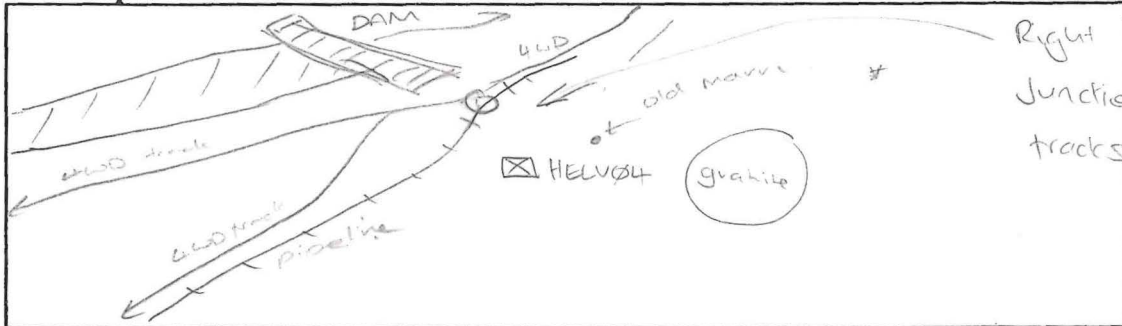
DATE TRIP 8.10.96 RECORDERS AM, ML & NG

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below



Road Location

Geographic Location Latitude 31 56 39.8 S Longitude 116 04 39.2 E Altitude 80m
GPS ☒ Accuracy PDOP=2.9 7sat
Map Sheet MUNDARING

Photograph Name _____ Number #3 Roll # 3

Topographic Position (Circle the correct response)
Upland _____ Lower slope _____
Upper slope _____ Valley _____
Midslope valley = 8 Washline _____

2. SITE DATA Circle the correct response

Slope flat gentle steep 3 Aspect N NE E SE S SW W 7 NW

Surface Soil 10cm Depth to Rock 0-7m Colour DK Brown

Exposed Rock type Granite % surface cover 5% size range 20cm - 1.5m

Litter 780% % surface cover _____ Depth (cm) 20-30cm

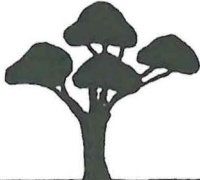
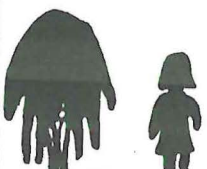
Bare Ground 1 % surface cover)

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Mulr)- use pencil only

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class 2-10% 10-30% 30 - 70% over 70%

TREES						MALLEES	
	over 15m	5-15m	under 5m	over 8m	under 8m		
LIFE FORM						30m	10m
COVER CLASS (%)	10-30% 20%	2-10%					
DOMINANT SPECIES	E. calophylla	E. calophylla					
SHRUBS				SHRUBS			
	over 2m	2m - 1.5m	1.5-1m	1-0.5m	under 0.5m		
LIFE FORM						2m	1m
COVER CLASS (%)		2-10%	>70% 10-30%		30-70%		
DOMINANT SPECIES		H. undulata	Xan. pteris M. weidlii X. gracilis	Xan. pteris M. weidlii HT	Phy. rad Hibb. hypericoides Dry. nivalis		
GRASSES		HERBS		SEDGES		over 0.5m	
							under 0.5m
LIFE FORM							1m
COVER CLASS (%)		2-10% 2%	2-10%				30-70%
DOMINANT SPECIES		Helianthus Atriplex	Lep. angustatum (broad)				Lixo. flexuosa

4. VEGETATION CONDITION

Comments	3 1/2 - 4	Tall woodland Cape tulip in plot. Old stand of mallee with shrubby understorey.
----------	-----------	--

2.

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIFIC PRESENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVOL

Record on Sheet

Date

4.12.96 (R)

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

TREES			No	FI	ID	SHRUBS (cont.)			No	FI	ID	HERBS (cont.)			No	FI	ID
<i>Eucalyptus</i>	<i>calophylla</i>	✓			R							<i>Thelymitra</i>	<i>macrophylla</i>	✓	✓		✓
												<i>Lomandra</i>	<i>preissii</i>	✓			✓
SHRUBS												<i>Drosera</i>	<i>mergesii</i>	✓			✓
<i>Xanthorrhoea</i>	<i>gracilis</i>	✓			✓							<i>Dampiera</i>	<i>linearis</i>	✓			R
<i>Xanthorrhoea</i>	<i>preissii</i>	✓			✓												✓
<i>Macropidia</i>	<i>ricollii</i>	✓			✓							<i>Chaenactis</i>	<i>combosa</i>	✓			✓
<i>Phyl</i>												<i>Burchardia</i>	<i>congesta</i>	✓			✓
												<i>Haemodorum</i>	<i>sp. shap. leaf</i>	✓			✓
												<i>Arthropodium</i>	<i>capillipes</i>	✓			✓
GRASSES						<i>Poa</i>	<i>drummondiana</i>	✓	✓		R	<i>Cheilanthes</i>	<i>austrotenuifolia</i>	✓			✓
						<i>Stipa</i>	<i>elegantissima</i>	✓	✓		R	<i>Romulea</i>	<i>rosea</i>	✓			✓
						<i>Briza</i>	<i>maxima</i>	✓	✓		R	<i>Dioscorea</i>	<i>hastifolia</i>	✓			✓
→ <i>Boraginaceae</i>	<i>sp. Wavona</i>	(id=✓)	✓	✓		<i>Tetrarrhena</i>	<i>laevis</i>	✓	✓		R	SEDGES					
<i>Thomasia</i>	<i>foliosa</i>	✓	✓	✓	R	<i>Stipa</i>	<i>pycnostachya</i>	✓	✓			<i>Desmodium</i>	<i>aspera</i>	✓			✓
ADS: <i>Gonolobium</i>	<i>marginatum</i>	✓				<i>Microseris</i>	<i>stipoides</i>	✓	✓		✓	<i>Tetraria</i>	<i>octandra</i>	✓			R
ADS: <i>Boraginaceae</i>	<i>sp. Wavona</i>	✓				<i>Danthonia</i>	<i>setacea</i>	✓	✓								
<i>Leucopogon</i>	<i>capitellatus</i>	✓	✓		R	<i>Briza</i>	<i>minor</i>	✓			✓						
						HERBS						<i>Juncus</i>	<i>caespiticius</i>	✓		✓	
<i>Hakea</i>	<i>lissocarpa</i>	✓			R	<i>Tricornis</i>	<i>elaticor</i>	✓	✓		R						
<i>Phyllanthus</i>	<i>calycinus</i>	✓			R	<i>Scaevola</i>	<i>pilosa</i>	✓	✓	✓	R						
<i>Hakea</i>	<i>undulata</i>	✓			R	<i>Cassipou</i>	<i>racemosa</i>	✓	✓								
<i>Hibb.</i>	<i>hypericoides</i>	✓			R	<i>Kennedia</i>	<i>stirlingii</i>	✓	✓		R						
<i>Pryandora</i>	<i>lindleyana</i>	✓			R	<i>Homeria</i>	<i>flaccida</i>	✓	✓		R						
<i>Arctia</i>	<i>pulchella</i>	✓			R	<i>Monardella</i>	<i>bracteosa</i>	✓	✓								
						<i>Oralis</i>	<i>perennans</i>	✓	✓		✓						
						<i>Drosera</i>	<i>pallida</i>	✓	✓		✓						
						<i>Agrostocrinum</i>	<i>scabrum</i>	✓	✓		R						
						<i>Caesia</i>	<i>micrantha</i>	✓	✓		R						
						<i>Cassipou</i>	<i>racemosa</i>	✓	✓		R						
						<i>Lomandra</i>	<i>brittanii</i>	✓	✓	✓	R						
						<i>Centropus</i>	<i>drummondiana</i>	✓	✓		✓						

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELVØ4

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

Date 8.18.96

stipa elegantissima

Cassytha racemosa

[illegible]

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

SITE No HELJ04

Record on Sheet

Date 4.12.96

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

[illegible]