Roadside Conservation Committee

NATURAL RESOURCE MANAGEMENT IN TRANSPORT CORRIDORS:

WORKING WITH ENVIRONMENTAL AND CULTURAL VALUES

22nd November 2007

Start	Duration	Presenter	Subject
8.15	**10 min**	**Shane Power Joann Johnston (MRWA)**	**Welcome & Aims of the day**
8.25	**25 min**	**Cressida Wilson (RCC)**	**The value of roadside vegetation**
8.50	**50 min**	**Cressida Wilson Emma Adams Wendy Thompson (DEC)**	**Managing Declared Rare Flora (DRF) in road reserves –** • Why are DRF special? • Legislation surrounding flora in WA • MacMahon's permit to take DRF • What DEC does to manage DRF • What Main Roads can do to manage DRF • Early liaison with DEC to manage DRF • DRF species in TNC 4
9.40	**20 mins**	**ALL**	**SMOKO**
10.00	**20 min**	**Murray Limb and Joann Johnston (MRWA)**	**Main Roads Environmental Assessment and Approvals Process**
10.20	**30 mins**	**Joann Johnston (MR)**	**Clearing of Native Vegetation: Exemptions and the Main Roads Purpose Permit**
10.50	**30 min**	**Brian Champion (Gubrun NTG)**	**Cultural Sensitivity**
11.20	**30 min**	**Lawrence Sellers (MRWA)**	**Aboriginal Heritage Assessment and Approval Process**
11.50	**15 min**	**ALL**	**Questions, review of morning, feedback forms**
12.05	**40 min**		**LUNCH**
12.45	**30 min**	**Cressida Wilson**	**Identification and management of local roadside weeds**
1.15	**1 hour 30 min**	**ALL**	**Site visits** • Rehabilitation and batter stability
2.45	**15 min**	**ALL**	**Questions, review of afternoon, feedback forms**

Natural Resource Management in Transport Corridors
Course Feedback Questionnaire

Please fill out your assessment of the major sections of the course. This feedback is essential to the planning of further courses and your comments are greatly appreciated. All assessment will remain strictly confidential.

Your current job/position:……..

Please indicate your response from 1 to 5 where: 1 = not useful at all, 5 = extremely useful

Presentation	**Usefulness to your job**	**Please comment**
The value of roadside vegetation in transport corridors		
Legislation surrounding DRF and MacMahon's permit to take		
Managing DRF		
DRF in TNC 4		
Main Roads environmental assessment and approvals process		
Clearing of native vegetation: exemptions and the Main Roads purpose permit		
Aboriginal heritage assessment and approvals		
Cultural sensitivity		
Weed identification and control on roadsides		
Site Visit		

Your comments relevant to the workshop, especially content:

……

……

……

……

Please comment on the usefulness of the field component and suitability of the location and time allocation:

……

……

What improvements to the training workshop, if any, would you suggest?

……

……

……

……

Are there any other topics of interest that would be useful workshop components in this workshop?

……

……

……

What changes will you make to your daily work activities?

……

……

……

What did we do well?

……

……

……

THANK YOU

Declared Rare Flora, its friends and allies

Flora of Western Australia

- 12 500 species of vascular plants in WA
  - ½ Australia's total flora
- Majority of spp occur only in WA
  - E.g. 79% of flora in SW is endemic
- A result of extremely old landscapes
  - In-situ weathering of landforms leaving a mosaic of soils and habitats
  - Isolation

Threat and rarity

- Declared Rare Flora
  - Threat: clearing, mining, roads…
  - Rare: naturally rare due to geological processes
  - Declared by the Minister for Environment
  - Specially protected
- IUCN raking
  - Presumed extinct
  - Threatened
    - Critically Endangered
    - Endangered
    - Vulnerable
  - Conservation dependent
  - Data deficient

Threat and rarity

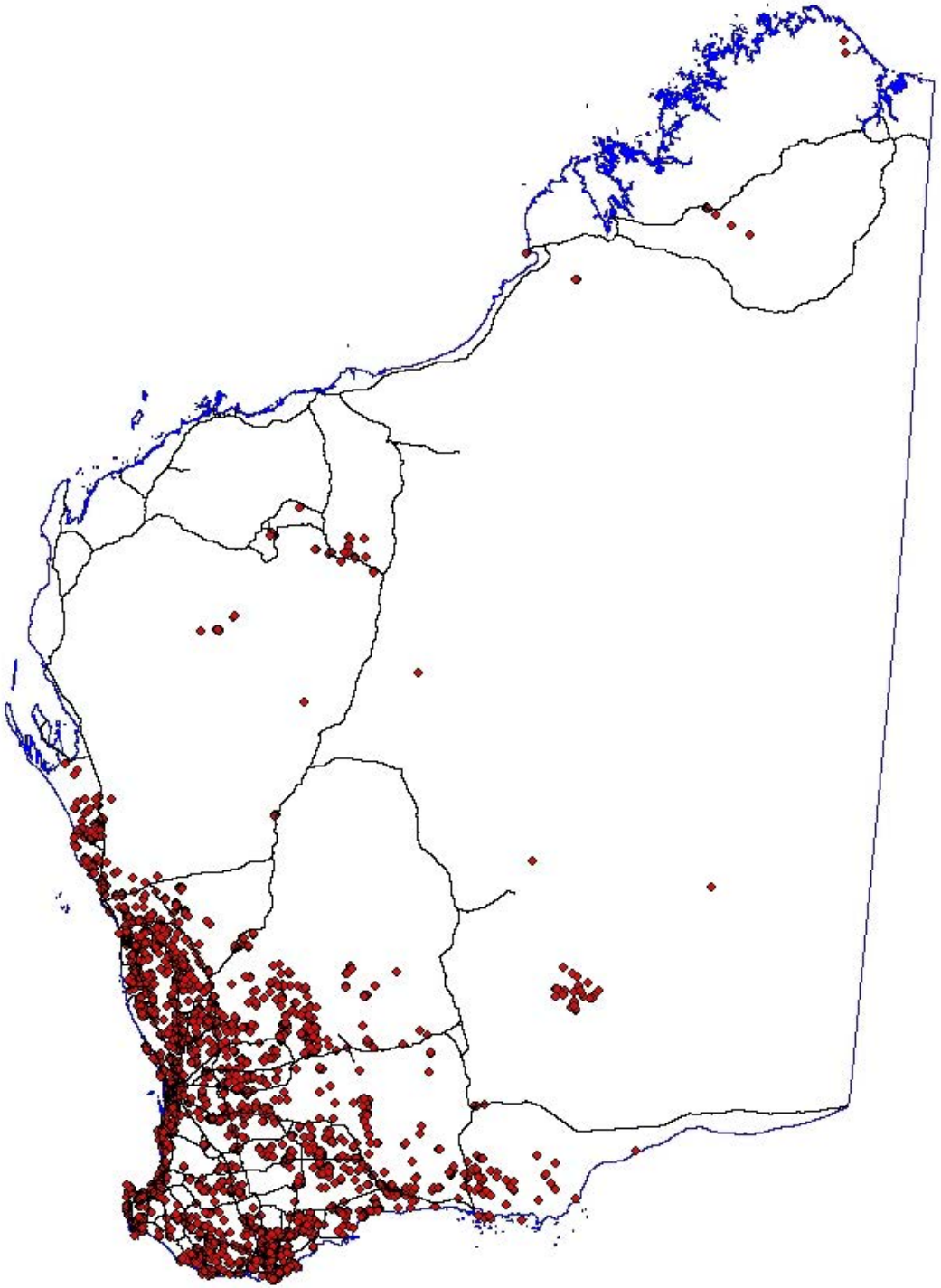
- Priority
  - Insufficient survey data to determine true status *OR*

    Naturally rare
  - Ordered according to perceived urgency for further survey
    - 1= few populations and land under threat
    - 2= few populations but land secure for conservation
    - 3= several populations but not considered under threat
    - 4= adequately surveyed but monitored to check status
  - Further surveys needed

Across the state…

	Declared Rare Flora		Priority Codes				Total no. of Taxa
Region	**R**	**X**	**1**	**2**	**3**	**4**	
Kimberley	4	0	51	43	35	5	138
Pilbara	2	0	41	34	55	7	139
Goldfields	**15**	**0**	**90**	**41**	**65**	**20**	**231**
Midwest	114	1	194	171	239	74	793
Swan	58	0	42	54	84	77	315
South West	46	1	23	33	66	49	218
Warran	21	0	15	47	51	37	171
Wheatbelt	116	4	120	140	178	85	643
South Coast	93	5	112	196	188	141	735
Unknown		3	2				5
State	**378**	**14**	**615**	**634**	**654**	**331**	**2626**

Summary of plant taxa with priority for conservation by DEC regions 21/12/06



Three avenues of protection

- Wildlife Conservation Act 1950
  - Flora and fauna in WA
- Environmental Protection and Biodiversity Conservation Act 1999
  - Flora, fauna, habitat across Australia
- Environmental Protection (Clearing of Native Vegetation) Regulations 2004
  - Flora and faunal habitat in WA

Wildlife Conservation Act 1950

This is the primary statute protecting fauna and native vegetation on Crown land (which includes all public roads)
For the purposes of the Act:

Fauna means:

- Any animal native to any part of Australia
- Any animal that migrates to Australia
- Includes eggs, larvae, skin, fur, plumage and carcass

Flora means:

- Any plant, including wildflower, palm, shrub, tree, fern, creeper or vine, which is native to Western Australia
- Includes any part of flora and all seeds and spores

Under this Act, protected flora on Crown land is deemed to be the property of the Crown, until legally **taken**.

Wildlife Conservation Act 1950

To **take** fauna includes:

to kill, capture, disturb or molest any fauna by any means or to use any method whatsoever to hunt or kill any fauna whether this results in killing or capturing any fauna or not

To **take** flora includes:

to gather, pluck, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means

Wildlife Conservation Act 1950

Flora and Fauna protection laws and the Crown:

- The fauna provisions of this Act do not bind the Crown
- The flora provisions of this Act bind everyone, including the Crown

BUT!

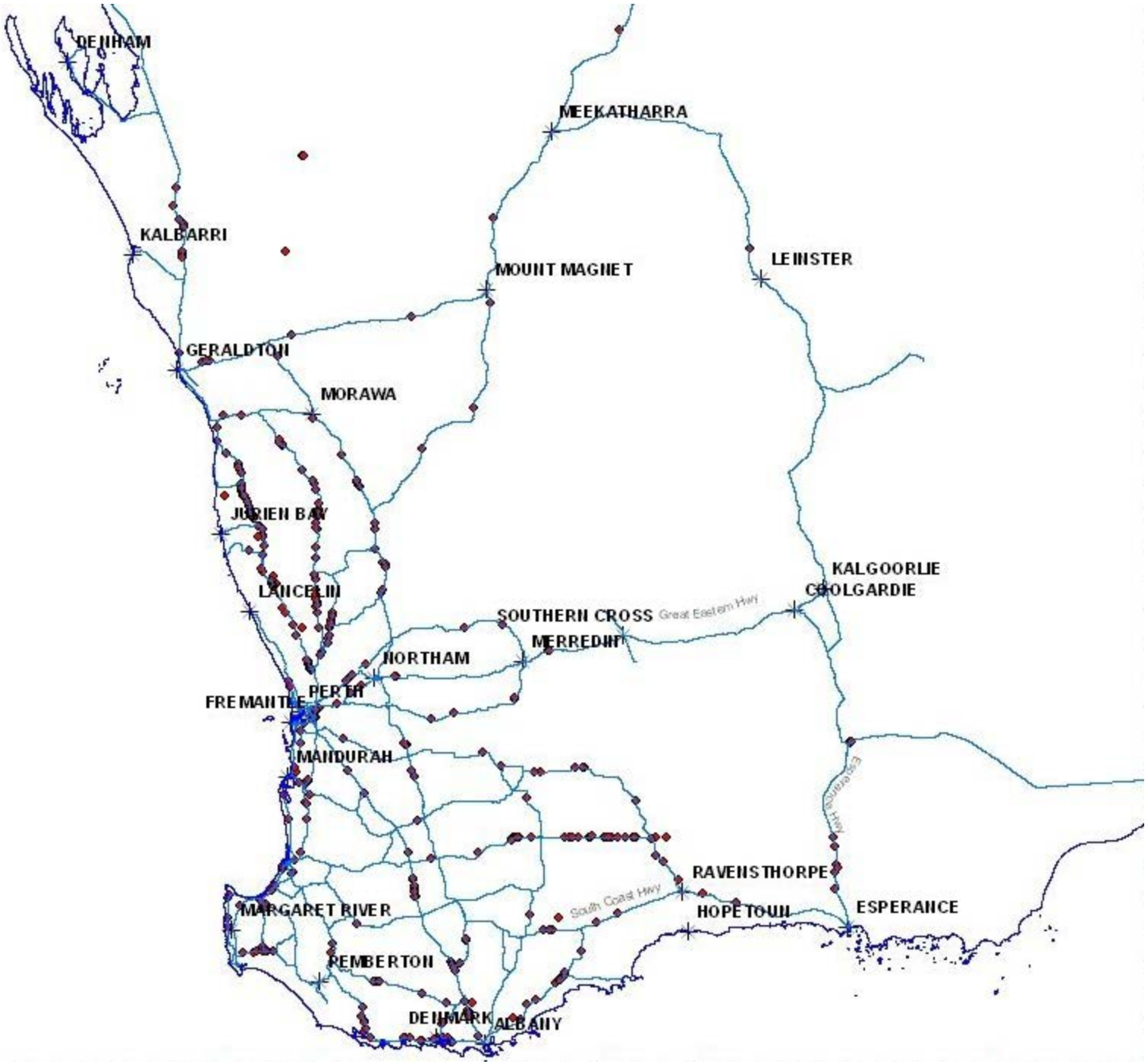
- Under section 23B, flora can be taken if a person is acting under a licence or statutory power
  - – Main Roads can take what flora they need to in order to undertake their statutory responsibilities
  - – This does NOT extend to Declared Rare Flora

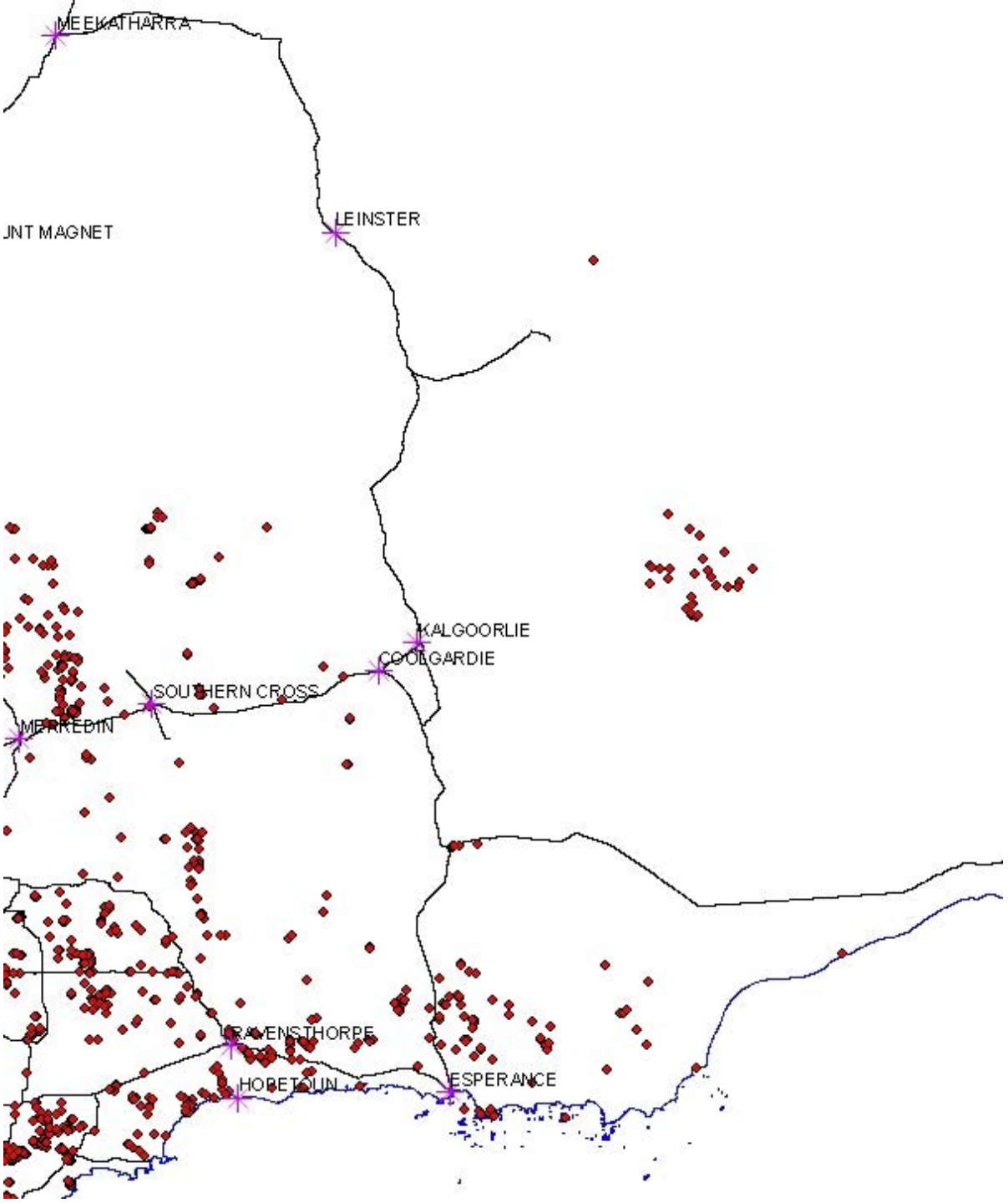
Wildlife Conservation Act 1950

- Declared Rare Flora (DRF)
  - Offered special protection by the Act
  - Permit to take is required regardless of action, agency, etc.
  - Carefully considered by the Minister for Environment before declaration
- Priority Flora
  - Encourage protection and considerate management

MacMahon's permit to take

- Year-long permit with conditions:
  - Every effort is made to avoid DRF
  - DRF only to be taken when absolutely necessary
  - Obtain written permission from DEC 1 month prior to work on all sites
  - Consult with relevant DEC regional office (Esperance and Kalgoorlie)
  - Check approvals needed under the EPBC Act 1999
  - Ensure that all personnel are aware of the permit conditions
  - Covers activities of MacMahon operations personnel acting under direction of permit holder


DENHAM
MEEKATHARRA
KALBARRI
MOUNT MAGNET
LEINSTER
GERALDTON
MORAWA
JURIEN BAY
KALGOORLIE
COOLGARDIE
LANCELIN
SOUTHERN CROSS
Great Eastern Hwy
MERREDIN
NORTHAM
PERTH
FREMANTLE
MANDURAH
Esperance Hwy
RAVENSTHORPE
South Coast Hwy
MARGARET RIVER
HOPETOUN
ESPERANCE
PEMBERTON
DENMARK
ALBANY


MEEKATHARRA
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LEINSTER
KALGOORLIE
COOLGARDIE
SOUTHERN CROSS
MERREDIN
RAVENSTHORPE
HOPETOUN
ESPERANCE

The Environmental Protection and Biodiversity Conservation Act 1999

Commonwealth legislation

The EPBC Act promotes the the conservation of biodiversity through:

- The identification of and preparation of threat abatement plans for key threatening processes

The EPBC Act regulates the assessment and approval of activities:

- Which have a significant effect on matters of national environmental significance
  - Nationally listed threatened species and ecological communities
  - Ramsar wetlands
  - World and National Heritage properties and places
  - Migratory species

Environmental Protection (Clearing of Native Vegetation) Regulations 2004

- Covers all flora native to WA (alive and dead)
- Clearing is doing substantial damage to native vegetation or any other act or activity that causes damage
- Clearing native vegetation is prohibited unless:
  - Clearing is exempt
  - A permit has been granted
    - Area
    - Purpose

Aims of the Day

- Raise awareness of roadside vegetation values and Declared Rare Flora
- Ensure everyone has a clear understanding of their responsibilities concerning Declared Rare Flora
- Discuss ways in which TNC4 and MRWA can help protect rare flora
- Raise awareness of aboriginal heritage and culture in TNC4

Roadside Conservation Committee

An introduction

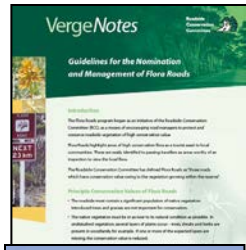
Roadside Conservation Committee

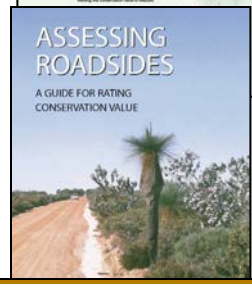
- Formed due to community concern
- Coordinate and promote the conservation and effective management of roadside vegetation
- 1969 - 1971 Road Verge Conservation Committee (RVCC)
- 1973 - 1983 RVCC reformed
- 1984 - present Roadside Conservation Committee

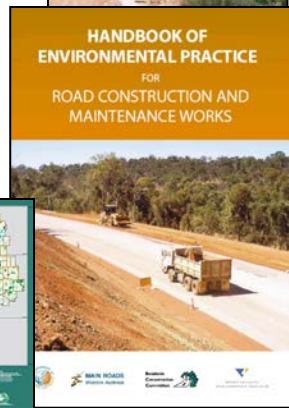
- Represented on the committee:
  - State and Local Government (inc. Main Roads and DEC), utility providers and community conservation organisations

Services of the RCC

- Works with managers and uses of road and rail reserves to maintain and enhance reserve values
- Advice on management issues
- Training
- Vegetation management plans
- Roadside conservation value mapping
- Recognition of high conservation value roads through the Flora Roads program







Roadside Vegetation

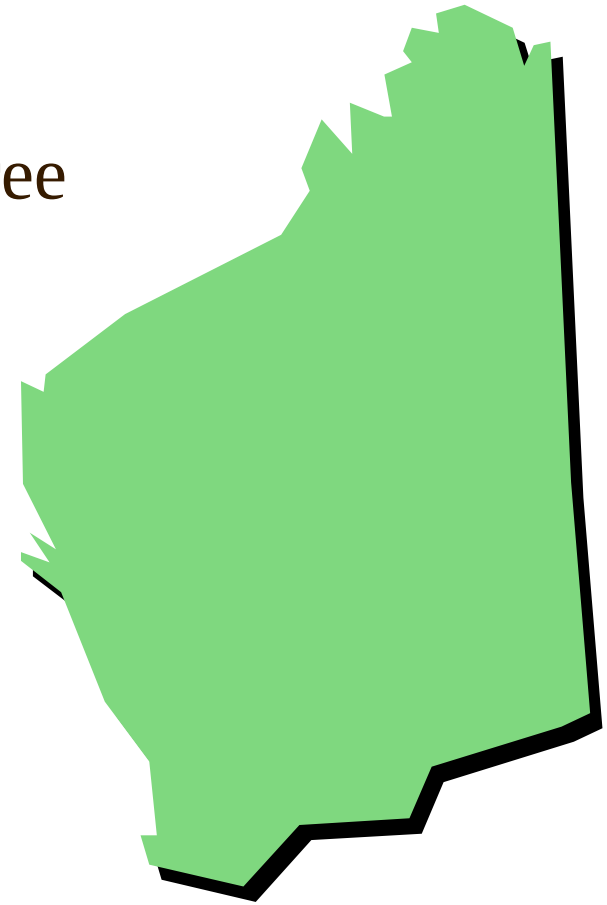
The Roads of Australia

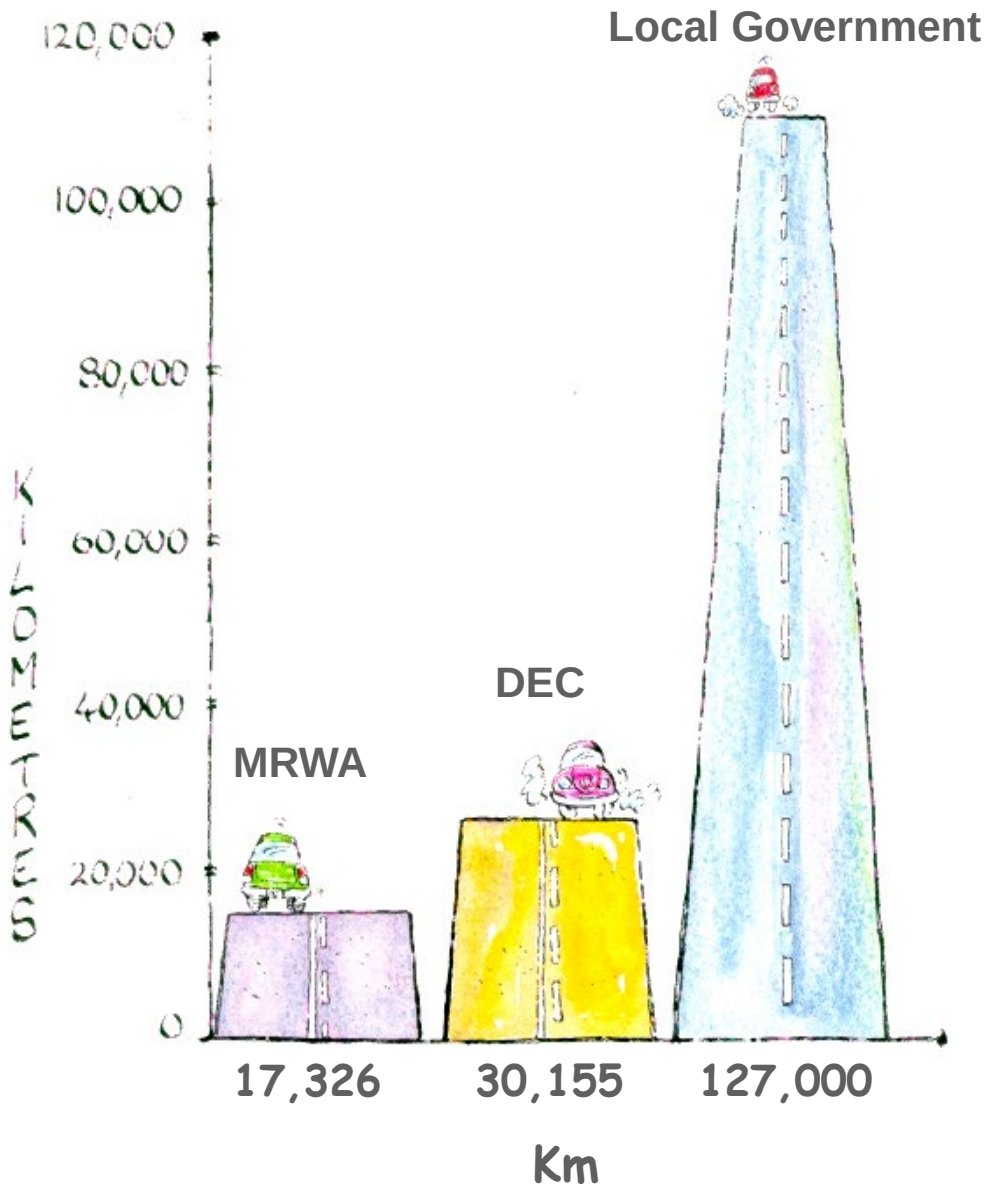
40 laps!

The Roads of Australia

- 19 % located in WA

- Management shared by three main groups…

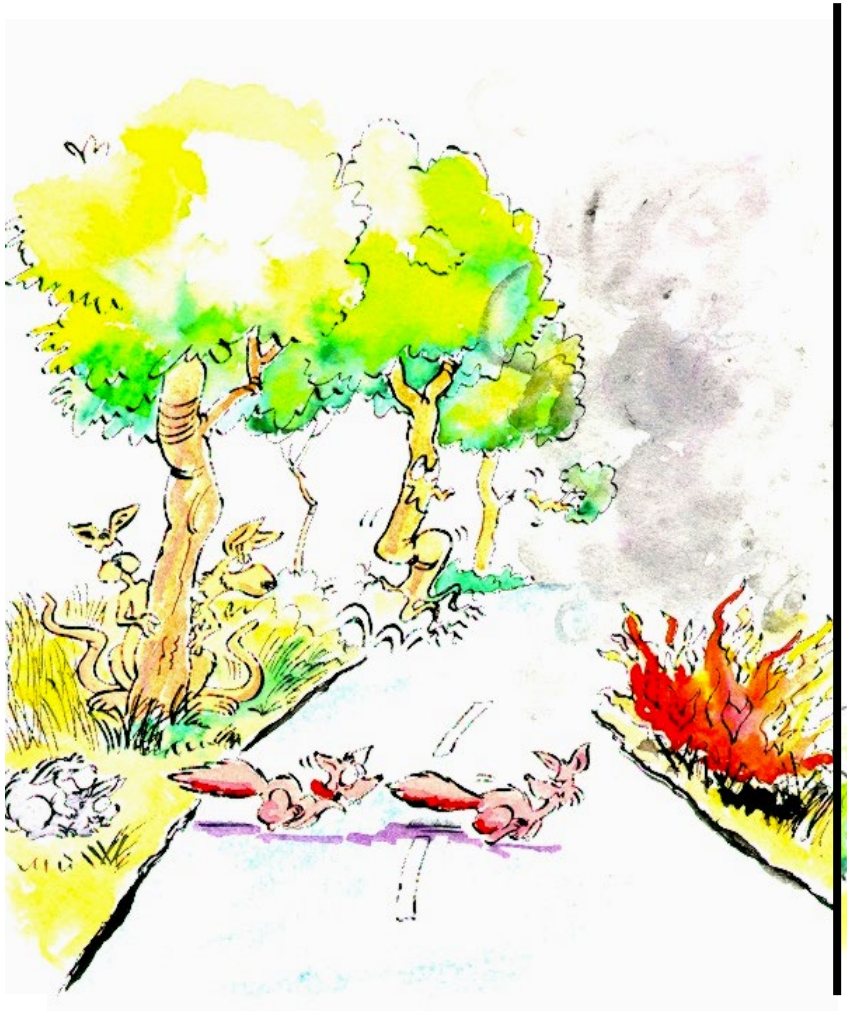



120,000
100,000
80,000
60,000
40,000
20,000
0
KILOMETRES
Local Government
DEC
MRWA
17,326
30,155
127,000
Km

Two distinct types of roadside in TNC 4

- Contrasting adjoining land use
  - Crops or grazing
- Continuous vegetation
  - What's on the roadside is "the same" as outside the road reserve

What are Roadside Values?



Biodiversity Values

- Flora and Fauna
  - Wildlife habitat
  - Corridors
  - Declared Rare Flora

53%

Biodiversity Values

- Remnant Vegetation
- Biodiversity
- Revegetation
- Scientific/Education

Shire	% Native Vegetation
Yilgarn	23.6
Esperance	27.4

Vegetation types represented by less than 30% = ecologically endangered

National Objectives and Targets for Biodiversity Conservation 2001-2005 (Environment Australia)

Landcare Values

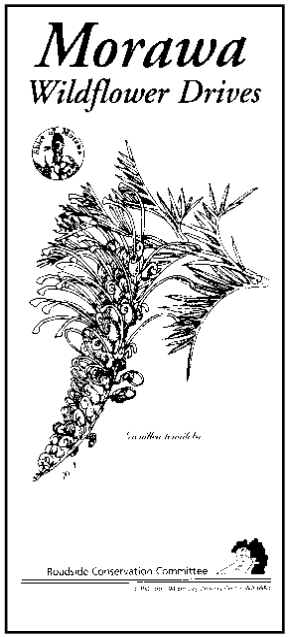
- Stock shelter
- Crop shelter
- Erosion
- Salinity

Cultural Values

- Indigenous sites
- European Historical areas

Aesthetic Values

- Community perceptions and expectations
- Tourism



Country	$ in Millions Spent
UK	133
Indonesia	112
Singapore	112
New Zealand	72
Malaysia	70
Japan	69
Germany	46
USA	41

Aesthetic Values

Continuous vegetation

- Landforms
  - Soil types
  - Habitat types
  - Flora associations
- Seasonality
  - “normal” years vs “wet” years
- Mining disturbance

Weed Management and Control

Roadside Conservation Committee

The Weed Menace

- Over the last 200 years, over 28,000 foreign plants imported
- Costs to Australian Agriculture alone now exceeds $4 billion per year
- Over 2,500 weed species are now established in the wild, with many more to come

The Weed Menace

- Not only look terrible, but also
  - Can be toxic eg. St John's wort
  - May cause respiratory problems eg. rye grass
  - Most displace native flora and crop plants
  - Can contaminate produce
  - Aquatic weeds may entangle swimmers

To Weed, or Not To Weed?

- Weedy Roadside

- High fuel loads = greater risk of fire
- $$ spent by surrounding landowners controlling weeds
- $$ spent by MacMahon maintaining road sides

- Native Vegetation on Roadsides

- Lowered risk of fire
- Reduced need for maintenance activities e.g. grading, and mowing
- Reduced loss of shoulder material through wind and water erosion
- Reduction in road failures due to water ponding and soft shoulders

Develop a Weed Management Program

- Get the biggest bang for your buck by:
  - Preventing new weeds establishing
  - Containing the spread of serious weeds
  - Protecting good, intact vegetation
  - Considering the impacts of serious weeds and their control on the rare flora and threatened plant communities
  - Considering restoration of degraded edges to reduce edge-effects

Implementing your Weed Management Program

- Prevent new weeds from establishing
  - Vehicle hygiene
    - Clean down your machinery and equipment
  - Soil hygiene
    - Avoid bringing soil or mulch in from elsewhere
  - Know your plants
    - Remove new infestations early to prevent spread

Implementing your Weed Management Program

- Limit the spread of established weeds
  - Work from “clean” to “dirty” areas
  - Avoid working in areas where weeds are actively shedding seed
  - Keep soil disturbance to a minimum
  - Target small populations in good quality bush and the outliers of dense infestations

Implementing your Weed Management Program

- Understand the biology of the weed you are trying to control
  - When is it actively growing?
  - What time of the year does it flower and seed?
  - How long do seed and other material remain viable in the soil?
  - How will it respond to fire?
  - When is it most vulnerable?
  - What is the best time for control?

Implementing your Weed Management Program

- Consider all options carefully
  - Physical, chemical or biological methods?
  - Impacts on nearby native flora and fauna, especially DRF
  - Important to adapt control methods to site-specific conditions and available resources
  - Timing is VERY important
  - Revegetate where possible

Throughout your weed management program…

- Keep a record of works programs over time
  - Date
  - Time
  - Type of works carried out
  - Details of methods used
  - Hours worked
  - Site conditions
- Work with your neighbours
  - In most cases it will take a team effort to control an infestation
  - Working together will make it a lot easier and cheaper for all parties.

Essential Weed Management Practices

- Many new infestations could be avoided through better management practices
  - Work from high conservation value to low conservation value wherever possible
  - ALWAYS clean down equipment when moving from an infested to a non-infested area – it takes 10 minutes, rather than years and $1000's later on
- Carefully consider fire
  - May make weed problems worse

Following Weed Removal…

- Assist natural regeneration
  - Stimulate germination of native seedbank
  - Where native seedbank is depleted, consider direct seeding and planting seedlings
- Monitor
  - Quantitative record of the effectiveness
  - Measures the impact on native plants and regeneration
  - Enables adaptability in future weed management practices
  - Justification for spending on weed management works

Some weeds you may come across…

African Lovegrass (*Eragrostis curvula*)

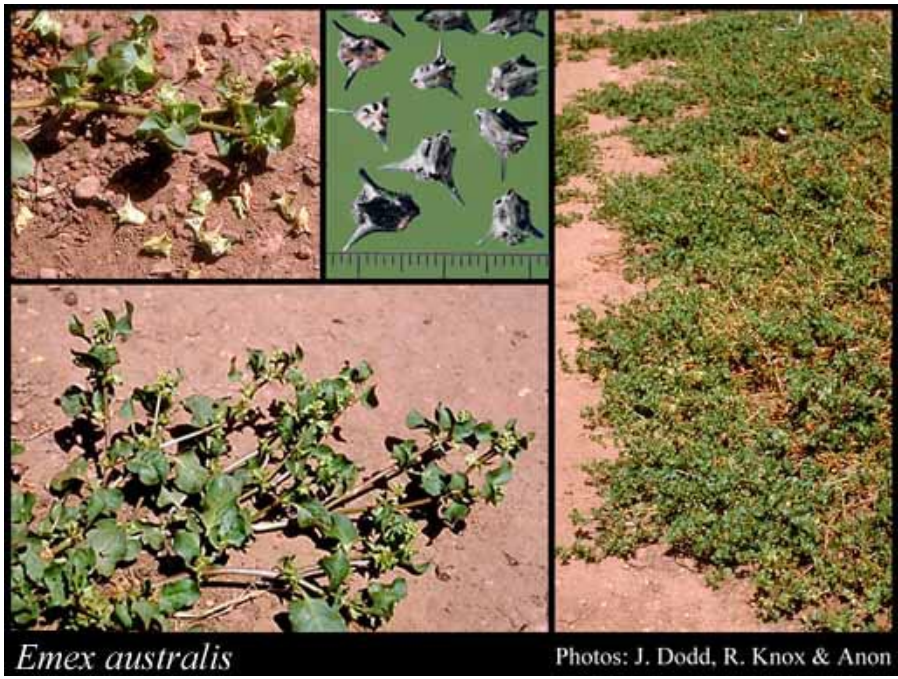
- Spread by seed through slashing, attaching to machinery, motor vehicles, animals, and as a soil and grain contaminant
- Tufted grass to 2m high
- Flowers most of the year

African Lovegrass (*Eragrostis curvula*)

- Control
  - On roadsides, spray shoulders with 3-4L/ha glyphosate (450g/L) annually in winter to reduce spread
  - Small infestations can be sprayed any time of year with 100mL glyphosate in 10L water
  - Repeat applications required to control seedlings
  - Following fire, will be one of the first plants to emerge. When it reaches 5-10cm high, zap it with the glyphosate
  - Follow slashing with spraying is effective, but slashing alone will only make the problem worse
  - Revegetate any bare ground – bare ground forms a perfect seed bed for new weed infestations

Doublegee

Emex australis



- **Leaves** are alternate (closely packed near base, widely spaced on stems), and 25–90 mm long, 15–60 mm wide
- **Flowers** usually occur in spikes

- **Control**
  - Winter/Spring

    Glyphosate
  - Pastures - when weeds actively growing
    Diuron + 2,4-DB
    Spinnaker® + diuron
    Broadstrike®
  - … others

Bone Seed

Chrysanthemoides monilifera ssp. *monilifera*

- Erect shrub to 3 m tall, leaves mostly with toothed margins; flowers in heads that usually have 4–8 petal-like ray florets; fruit globular, green, ripening black and fleshy, 6–10 mm wide; woody (‘bony’) seed covering surrounding a single seed.

- Control
  - Hand pull small plants to 1m
  - Cut and paint or inject with 100% glyphosate
  - foliar spray with 1% glyphosate in spring to summer

Perennial Veldt Grass (*Ehrharta calycina*)

- Spreads through water, wind, animals and slashing
- Tufted perennial to 80cm
- Inflorescence is a drooping erect panicle of reddish-purple flowers, 7-22cm long
- Flowers in spring and autumn

Perennial Veldt Grass (*Ehrharta calycina*)

- Control
  - For dense infestations, use 4L/ha Fusilade® to spray plants just before flowering in mid-July – this is crucial
  - Exercise caution around native plants
    - Sedges, rushes, orchids and native lillies are susceptible to Fusilade®
  - Fire is known to enhance germination
    - Following fire, use the opportunity to spray it out before it grows to seed bearing stage (usually 4-6 weeks)

Wild Radish (*Raphanus raphanistrum*)

- Spread by water, wind and machinery
- Characterised by a base rosette of stalked leaves which are lobed or toothed and often bristly
- Stem leaves are smaller
- White, yellow, mauve or pink flowers appear from autumn to spring
- Seed pods are 2-9cm long, ribbed and distinctly constricted between the seeds, and break up into single seeded pieces upon maturity
- Narrow conical tip lacks seeds

Wild Radish (*Raphanus raphanistrum*)

- Control
  - Soil disturbance often leads to a flush of seedlings
  - Spot spray with 1% glyphosate before flowering, OR
  - Spot spray with 500mL/ha glyphosate at flowering to reduce seed set
  - Has dormant seeds that will continue to germinate over the season and for several years
  - Plants mature and set seed very quickly
  - Hand remove isolated plants several times over the year, or every 8-10 weeks, and burn all plant material
  - Once seed pods are formed, seed often matures even when the plant has been uprooted

Handy References

- ***Bushland Weeds A Practical Guide To Their Management***, Brown K & Brooks K, Environmental Weeds Action Network 2002
  - On ground examples, and tables of specific weed control information, including biology information
- ***Southern Weeds And Their Control,*** Moore J & Wheeler J, Government of Western Australia
  - Identification, control information, easy to use, including what to do and what time of year to do it in
- ***Western Weeds A Guide To The Weeds Of Western Australia***, Hussey B, Keighery G, Cousens R, Dodd J & Lloyd S, Plant Protection Society of Western Australia 1997
  - Identification and control information. Currently being updated, info available online at **http://members.iinet.net.au/~weeds/western_weeds.htm**
- **www.weeds.crc.org.au**
  - All kinds of weed information, includes many free downloads on a number of weeds, control ideas, info sheets, case studies etc.
- **www.weeds.org.au/WoNS/bridalcreeper**
  - All information about Bridal Creeper, including free downloads
- **www.ento.csiro.au/weeds/bridalcreeper/project.html**
  - Map of release sites for Bridal Creeper Rust Fungus
- **http://florabase.dec.wa.gov.au/**
  - Information and photos of all plant species in W.A., including weeds

http://www.agric.wa.gov.au/

- Lots of information on Status, ID and control measures