



CERT III, IV & Diploma
Conservation & Land Management

Natural Area Restoration

Kylie Robertson

Kylie Robertson

- A bit about me
- A bit about SEEDS & conservation industry
- A bit about you

- *Why are you doing this course?*
- *What do you hope to get out of it?*
- *Have you had any experience in the industry, what was good or bad about that ?*
- *What is your favourite thing to do?*

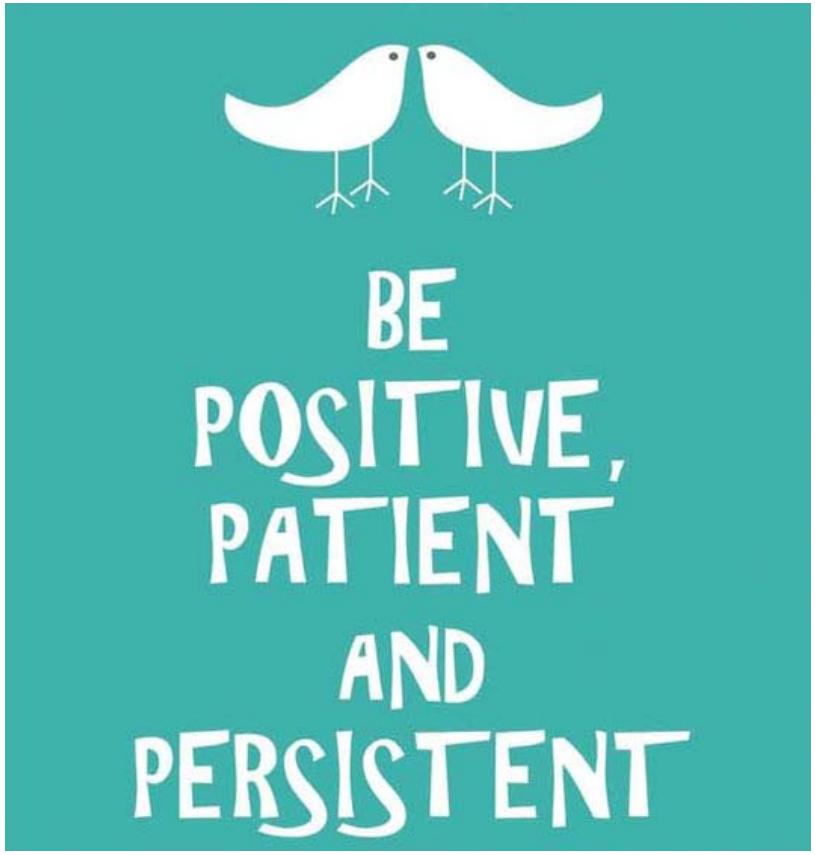
SEEDS
Bushland Restoration & Environmental Education

Ground Rules

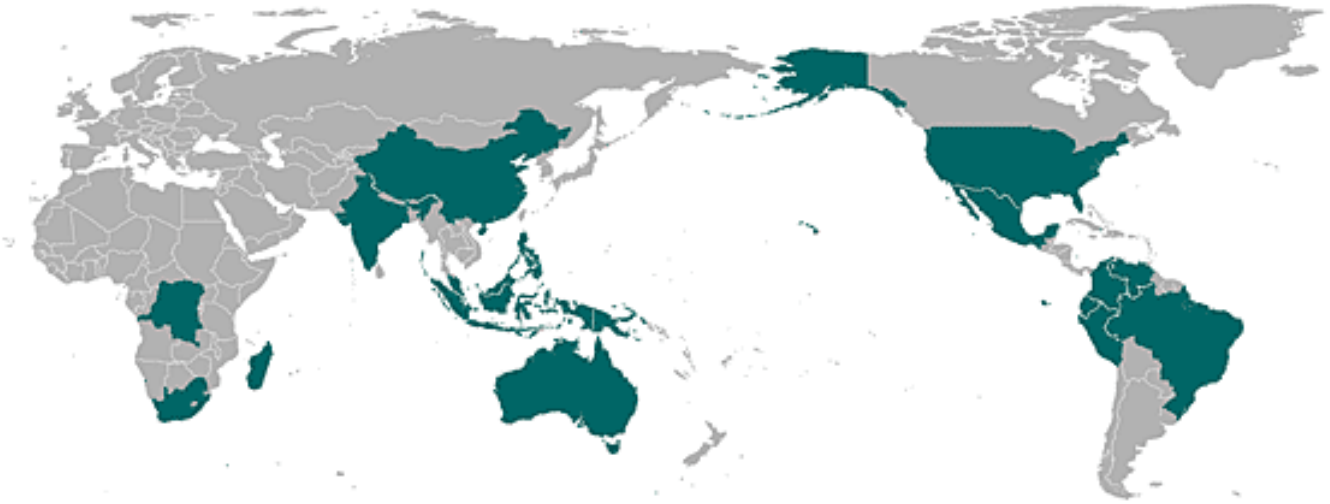
A safe & supportive learning environment

Negativity is not welcome or healthy

Serious about OH&S



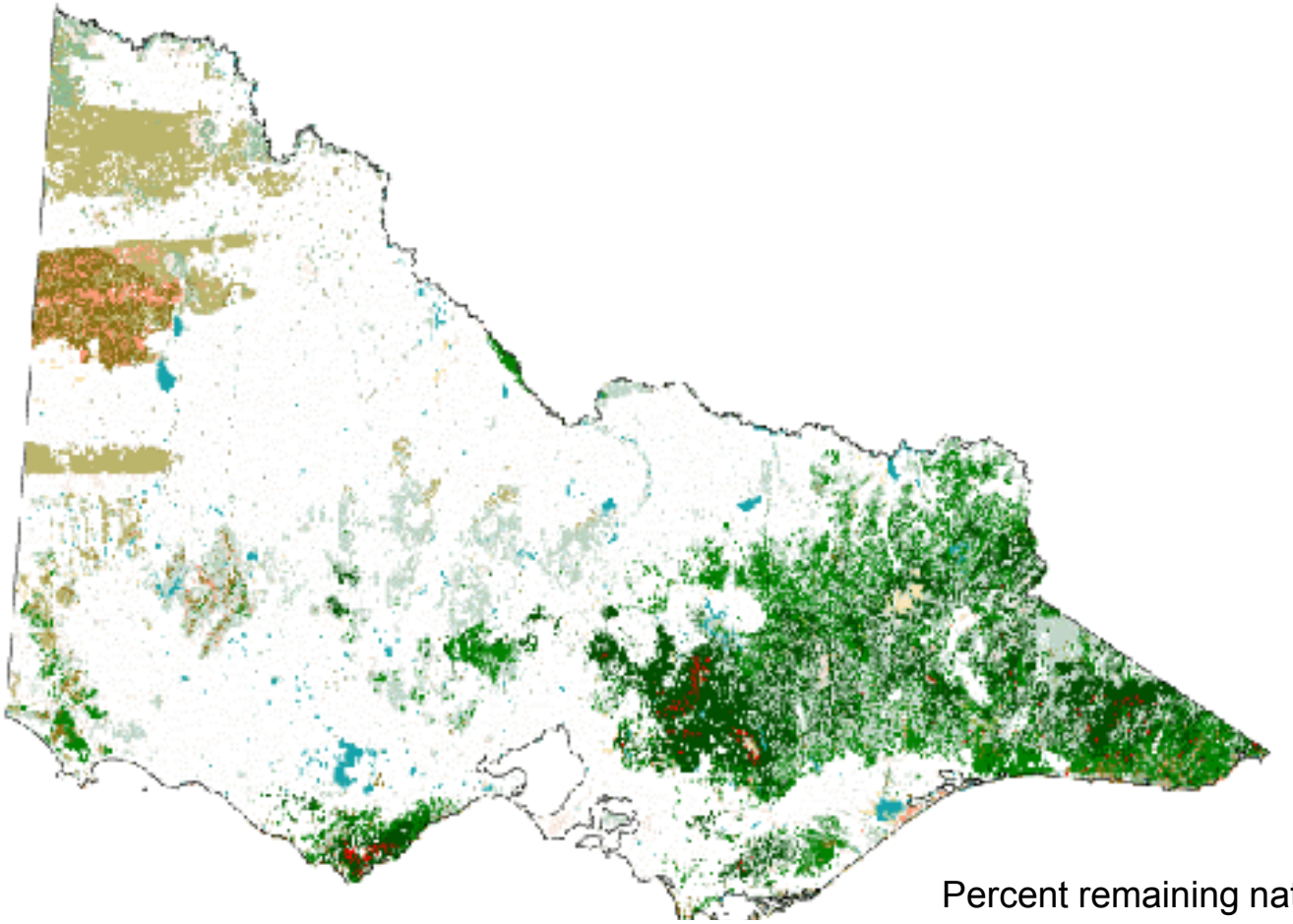
BIODIVERSITY



Australia is the most megadiverse developed country.

- The megadiverse countries have <10% global surface but supports >70% of the biological diversity on earth

Major vegetation groups (circa 1997) in Victoria

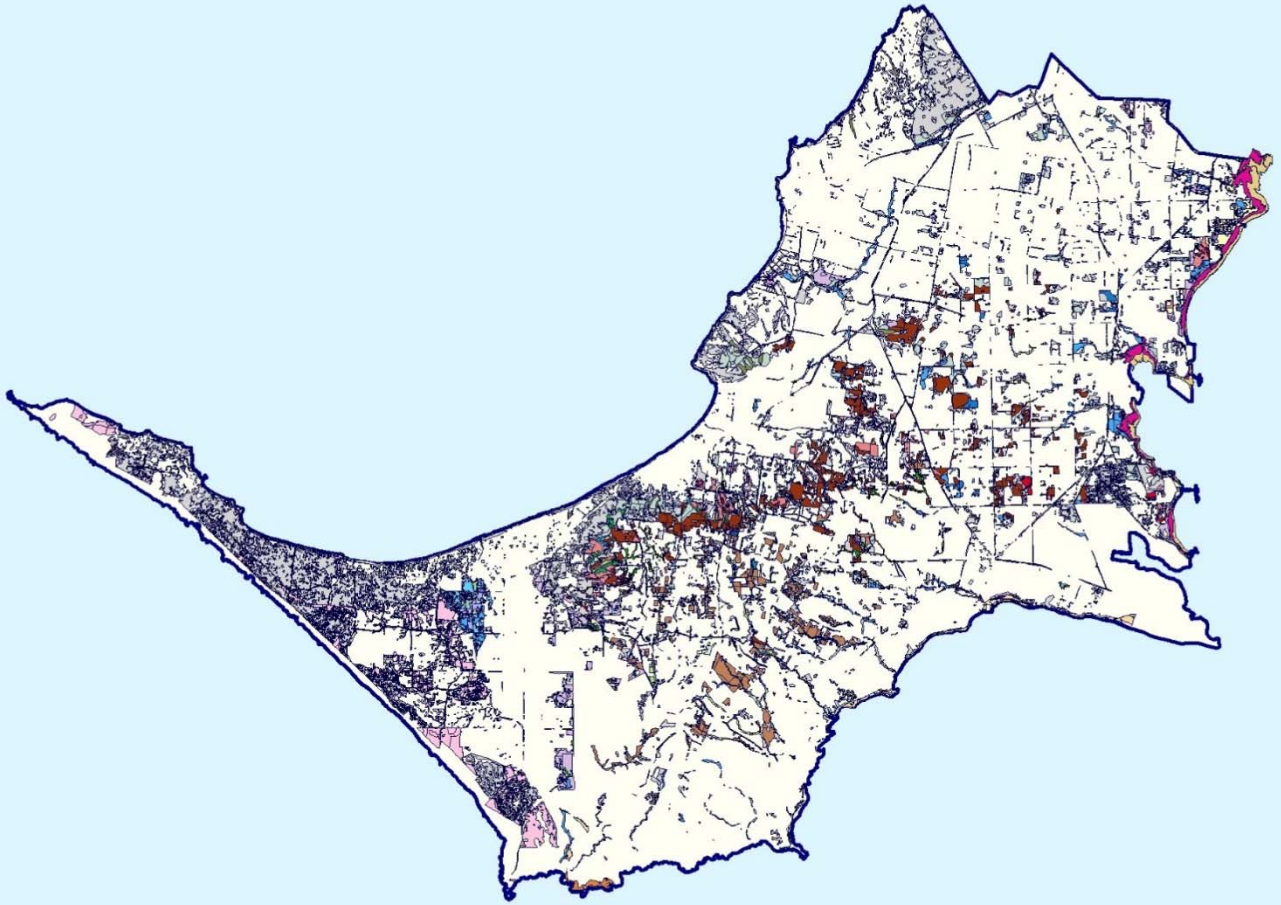


Percent remaining native vegetation: 30%

Major Vegetation Groups (circa 1997)

- Cleared/modified native vegetation
- Rainforest and Vine Thickets
- Eucalypt Tall Open Forests
- Eucalypt Open Forest and Low Open Forests
- Acacia Forests and Woodlands
- Callitris, Casuarina and Other Forests and Woodlands
- Melaleuca Forests and Woodlands
- Eucalypt Woodlands
- Eucalypt Open Woodlands
- Tropical Eucalypt Woodlands/Grasslands
- Low Closed Forest, Closed Shrublands and Other Shrublands
- Mallee Woodlands and Shrublands
- Acacia Open Woodlands
- Acacia Shrublands
- Chenopod Shrub, Samphire Shrubs and Forblands
- Heath
- Tussock Grasslands
- Other Grasslands, Herblands, Sedgelands and Rushlands
- Hummock Grasslands
- Mangroves, samphires, sand, rock, salt lakes, freshwater lakes

Native Vegetation Cover for Mornington Peninsula



Percent remaining native vegetation: 18%

44% of Victoria’s native plants are either extinct or threatened.

Environmental Sustainability Issues Analysis for Victoria, CSIRO.

75% of our waterways are degraded and 35% of wetlands destroyed.The Health of Our Catchments: A Victorian Report Card.

More than a third of the 90 Australian animal species so far identified as at risk from climate change are found in Victoria.

Climate Action Network Australia

12% of Victoria's remaining native revegetation is on private land yet supports 30% of our threatened species populations

Dep of Sustainability and Environment.

Already 30 per cent of Victoria’s animals are either extinct or threatened. Sustainability Issues Analysis for Victoria, CSIRO.

Mornington Peninsula Species of conservation significance

Fauna

Australasian Bittern
Australasian Shoveler
Azure Kingfisher
Baillon's Crake
Barking Owl
Black Falcon
Black-browed Albatross
Black-eared Cuckoo
Black-faced Cormorant
Black-tailed Godwit
Blue-billed Duck
Brown Quail
Cape Barren Goose
Caspian Tern
Chestnut-rumped Heathwren
Common Diving-Petrel
Common Sandpiper
Diamond Dove
Eastern Curlew
Fairy Prion
Fairy Tern
Freckled Duck
Glossy Grass Skink
Glossy Ibis
Great Egret
Grey Goshawk
Grey Plover
Grey-crowned Babbler
Grey-headed Flying-fox
Grey-tailed Tattler
Growling Grass Frog
Hardhead
Hooded Plover
Hooded Robin
Intermediate Egret
Latham's Snipe
Leathery Turtle
Lesser Sand Plover
Lewin's Rail
Little Egret
Little Tern
Magpie Goose
Musk Duck
Nankeen Night Heron
New Holland Mouse
Orange-bellied Parrot
Pacific Golden Plover
Pacific Gull
Pectoral Sandpiper
Pied Cormorant
Powerful Owl
Royal Spoonbill
Sanderling
Shy Albatross
Sooty Oystercatcher
Southern Brown Bandicoot
Southern Giant-Petrel
Southern Toadlet
Spotted Harrier
Spotted Quail-thrush
Swamp Skink
Swift Parrot
Tree Goanna
Wandering Albatross
Whimbrel
Whiskered Tern
White-bellied Sea-Eagle
White-faced Storm-Petrel
White-footed Dunnart
White-fronted Tern
Wood Sandpiper
Yellow-nosed Albatross

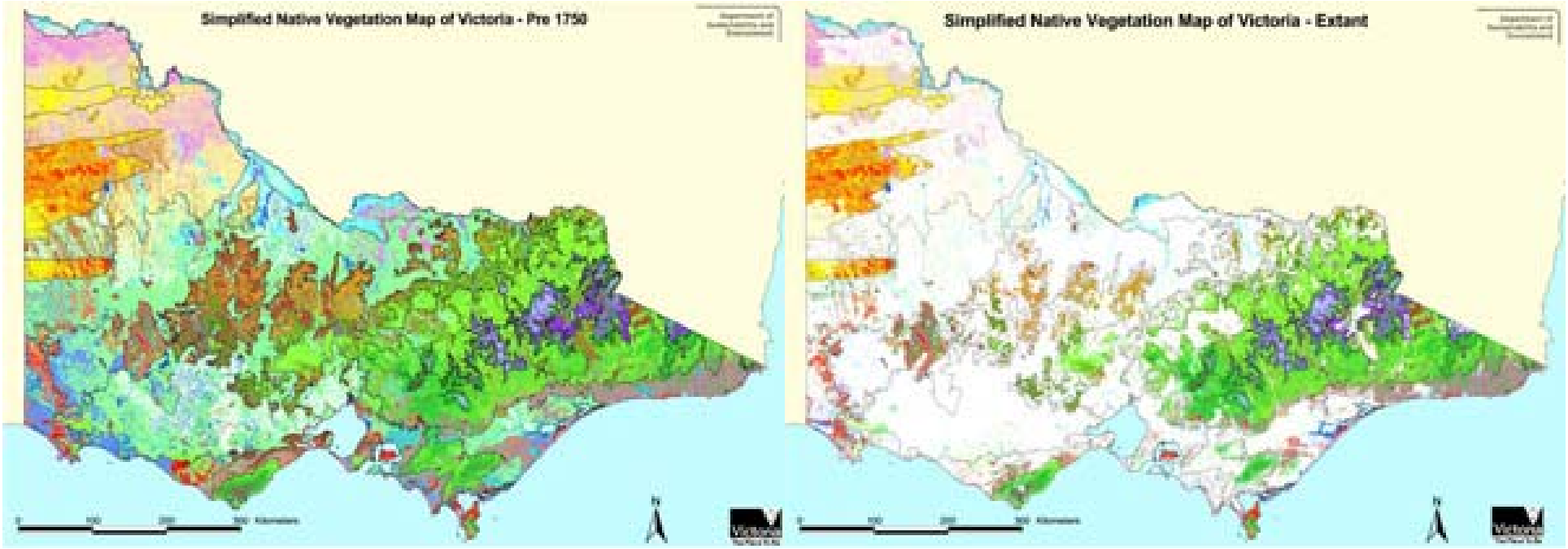
VROTS: listed Victorian Rare or Threatened Species

Flora

Abelia X grandiflora
Acacia retinodes var. uncifolia
Adiantum capillus-veneris
Adriana quadripartita
Adriana quadripartita (pubescent form)
Adriana quadripartita s.s. (glabrous form)
Atriplex paludosa subsp. paludosa
Austrofestuca littoralis
Avicennia marina subsp. australasica
Berula erecta
Caladenia dilatata
Caladenia thysanochila
Chiloglottis X pescottiana
Cladium procerum
Corunastylis ciliata
Corybas despectans
Diuris punctata var. punctata
Entolasia stricta
Eucalyptus crenulata
Euphrasia collina subsp. muelleri
Euryomyrtus ramosissima subsp. prostrata
Exocarpos syrticola
Glycine latrobeana
Juncus revolutus
Lachnagrostis scabra
Lawrencia spicata
Limonium australe
Lotus australis
Nicotiana maritima
Nicotiana suaveolens
Olearia sp. 2
Oxalis thompsoniae
Poa poiformis var. ramifer
Prasophyllum lindleyanum
Prasophyllum spicatum
Pteris comans
Pterostylis cucullata
Pterostylis grandiflora
Pultenaea canaliculata
Ranunculus papulentus
Salsola tragus subsp. pontica
Sarcocornia quinqueflora subsp. tasmanica
Stackhousia spathulata
Thelymitra circumsepta
Thelymitra longiloba
Thelymitra malvina
Thelymitra X irregularis
Triglochin minutissima
Zygophyllum billardierei

Mornington Peninsula's Biodiversity

- 700 HA of remnant vegetation
- 45-50 different ecological vegetation classes (EVC's)
- 800 indigenous plant species
- 367 fauna species







Supervise Natural Area Restoration

- Super important

Unit Topics

Learning Outcome Topic	Details
Introduction to restoration ecology	Current state of Victorias flora and fauna – the situation – the need for restoration Basic ecology Restoration ecology The three R's Bradley method Resource efficiency Some restoration concepts & terminology
Threats to natural areas	Threats to natural areas Weed legislation - WONS
Plant identification	Beyond plant identification – being able to not only identify plants but having knowledge of plants that is critical to managing natural areas. Knowing plant biology, time to maturity, seed viability, control techniques, revegetation viability of local species. Knowing how & where to find this information.
Mapping with Google Earth	Estimating % cover Intro to mapping techniques Using a gps Recording data – record sheets Presenting maps Working out area
Vegetation quality assessment	Estimating % cover Vegetation Quality systems

Learning Outcome Topic	Details
Weed Classification & management - WW	Weed Classification & management Woody Weed Control Techniques Scrambler & Vine Control Techniques Ground Flora weed Control Techniques
Habitat assessment & fauna	Costs of saving endangered species – is it worth it? Habitat hectares Threatened species – how to find out if they are in your areas?
EVC'S	What are evcs? Why do we have them How are they useful? How to identify different EVC's – by eye & using Biodiversity mapper – Jeff's EVC & DEPI EVC's Using EVC's to assist identification of species on sites Using EVC's to prepare plant lists Explore evc groups and present to class
Revegetation Basics	Reveg principles - Site preparation - Planning & timing - Plant selection - Specifications - Monitoring success - Costing out
Sourcing data	Collecting info yourself – habitat assessment, weed present, distribution and abundance, Sourcing fauna info from Biodiversity mapper and other thing, viridian database
Project Scope , design & Presentation	Establish the project purpose – ecological aims and objectives are developed and confirmed Costs & benefits – costs of not doing anything Consulting with the client

Classroom presentations – Discussions – Projects – Field Trips

ASSESSMENTS

Assessment Activity	Description	Criteria being assessed	Due Date
Participate in Class Activities 30%	**Participated in class activities** – a range of required class activities will occur over the unit along with field trips. The mark you receive for this component will be based on your participation in these activities - Includes keeping a terminology file - Plant id journal(see below) - Weed control techniques spreadsheet	Participating in discussions and field works. Demonstrates an understanding of unit theory Demonstrates practical application of restoration works techniques and procedures. Documents field trip details in journal	
Plant Journal info	**Plant Journal** – keeping a journal of plant samples for identification and restoration purposes, notes to be kept on the significance of the plant for management issues eg good revegetation species, invasive weed to be control by…., seeds viable for ?yrs etc *Journal to be supplied, use a double page layout for each plant eg plant sample on one side of page, information on the opposing side. A minimum of 20 plants & management info/issues to be submitted	Plant species and community recognition Factors affecting timing & method of plant selection Principles & methods relating to the prevention & control of pests and diseases	

ASSESSMENTS

Assessment Activity	Description	Criteria being assessed	Due Date
Design a natural area restoration project 30% *Group Project*	**Design a natural area restoration project** detailing objectives/goals, site description, maps, management issues, fauna issues /considerations, worksplans, techniques, timing, costings. *To be done in teams of 2-3 and includes a work records sheet detailing hours spent doing what	Carry out a site assessment for restoration Plan a natural area restoration project utislising restoration ecology concepts and terminology Calculate staff and resources required Produce a correctly formatted document that uses appropriate language and terminology	
Design a natural area restoration project 40% *Diploma only* *Individual Project*	**Design a natural area restoration project** detailing objectives/goals, site description, maps, management issues, fauna issues /considerations, worksplans, techniques, timing, costings. To be done individually	Contains all the points detailed	

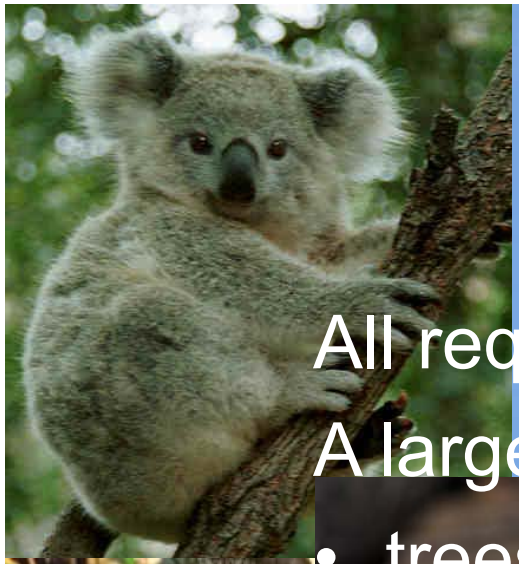

Beyond Plant ID




BIODIVERSITY



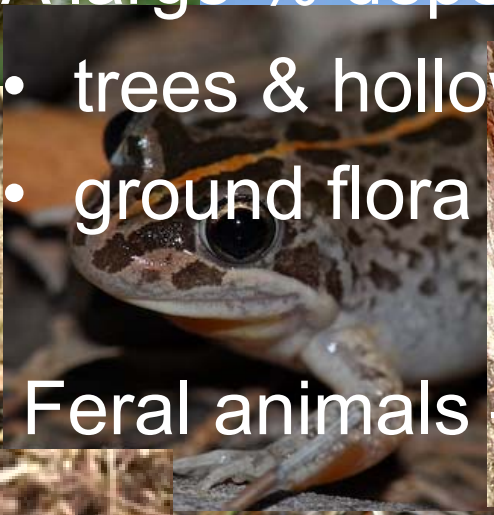
Fauna Biodiversity



All require habitat.

A large % dependant on:

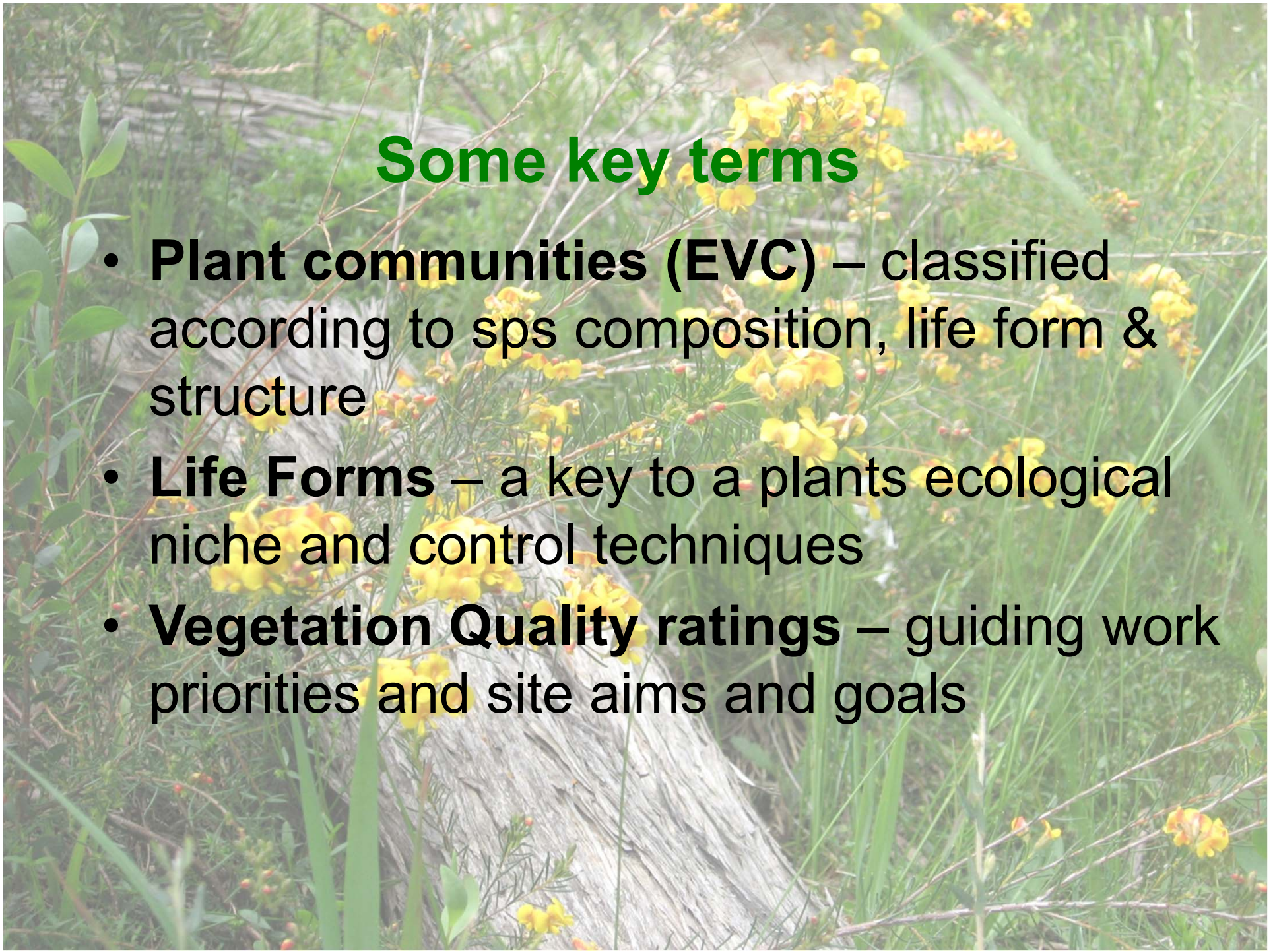
- trees & hollows
- ground flora vegetation



Feral animals – predation & displacing

.


Flora Biodiversity
1200 species recorded on Peninsula
800 species are Indigenous
Trees & Shrubs – 12%
Scramblers & Vines – 8%
Ground Flora Plants – 80%



Some key terms

- **Plant communities (EVC)** – classified according to sps composition, life form & structure
- **Life Forms** – a key to a plants ecological niche and control techniques
- **Vegetation Quality ratings** – guiding work priorities and site aims and goals

Grassy Woodland

Coast Banksia Woodland

Coast Headland Scrub

Gully Woodland

Coastal Alkaline Scrub

Swamp Scrub

Plant communities – classified according to sps composition, soil type, climate, life form & structure

Bushland Restoration Techniques–

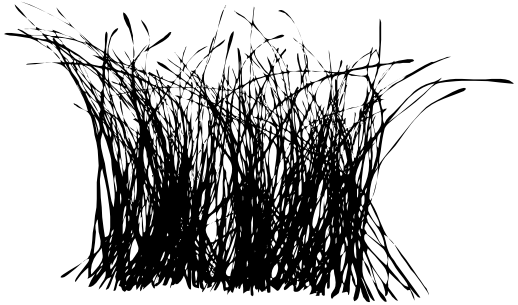
Group activity – list all the types of activities that might be undertaken when doing bushland restoration work

Life Forms – a key to a plants ecological niche and control techniques

Trees & Shrubs

Scramblers & Vines

Ground Flora



Principles of Bushland Restoration

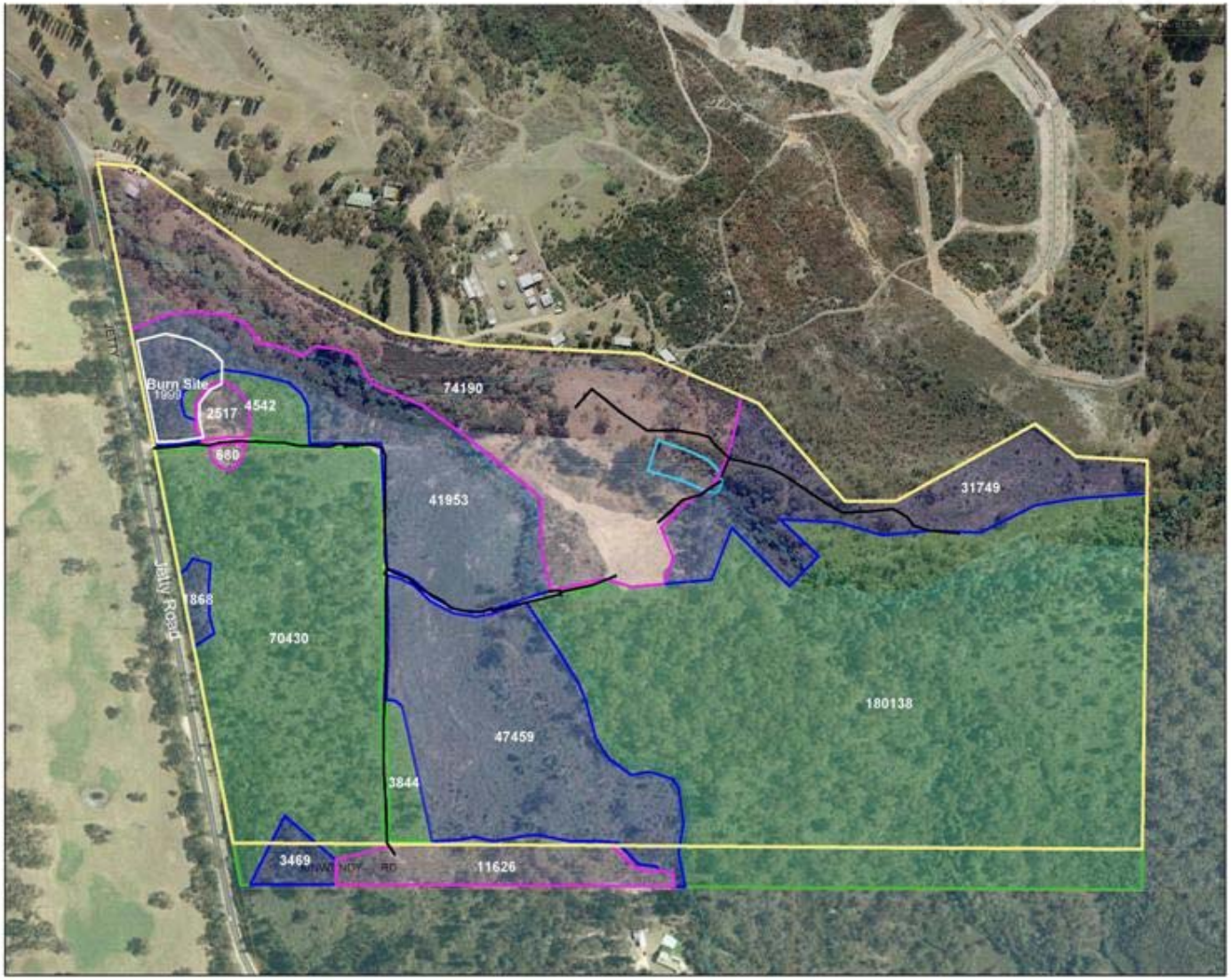
Key priorities for management – The 3R's

1. **Retention** – retaining natural vegetation is the highest priority as it is the least time consuming and most effective way of preserving indigenous flora & fauna. *Don't let your good areas go backwards*
2. **Restoration** – there is a good framework of indigenous species with some disturbance and weed invasion, works are weed control to encourage natural regeneration. *Manage weeds to encourage regeneration*
3. **Rehabilitation** – most difficult and time consuming, least efficient for restoring indigenous ecosystems, *last resort or for creating links and corridors, providing habitat*.

Vegetation Quality ratings –
guiding work priorities, site aims and goals

Vegetation Quality

- **Retention**: High quality vegetation with a high level of diversity. Low levels of weed invasion and disturbance, less >30% weed cover.
- **High Quality Restoration**: Moderate to high level of indigenous species diversity. Low to moderate levels of weed invasion and disturbance with 30-50% weed cover.
- **Low Quality Restoration**: Reduced level of vegetation quality and diversity of species. Moderate levels of weed invasion and disturbance with 50%-70% weed cover.
- **Rehabilitation :** Highly modified ecosystem with some indigenous species still present and/or weed levels of greater than 70% cover.



Retention

Restoration

Rehabilitation

NOTES

Melway reference 170 J10

Total Hectares: 44.4

Hectares Retention: 25.9

Hectares Restoration: 12.65

Hectares Rehabilitation: 8.9

Individual polygon areas in sq. metres are labelled as such on the map. This measurement also forms the identifier (name) for each polygon.

track

0 50 100 150 200 m

SCALE: 1 : 4000

Vegetation Quality 2004

Aerial Photographs taken December 2002 & March 2003

MORNINGTON PENINSULA Shire

COMMITTED TO A SUSTAINABLE PENINSULA

Peninsula Gardens
Bushland Reserve

Tootgarook Catchment

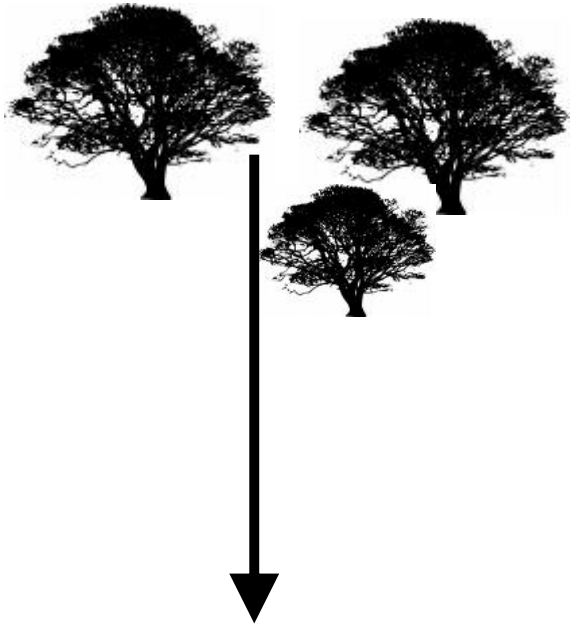
Setting Goals & Aims

Guiding principles

- Most efficient use of time & money – appropriate goals & follow up
- Retain high quality areas
- Upgrade bushland to a higher quality
- Determine priorities
- Develop a plan

Setting Goals & Aims

Big picture



Details

What do we want to achieve over the next 5 years?

- Retain - where?
- Restore - where?
- Rehabilitate - ?

What do we need to do to achieve this?

- Create a plan - works plan