Goulburn Broken Catchment Management Authority

Bogs field day

Highlands

Note:

- Presentations will be on GBCMA website
- Contact details – business cards on desk
- Informal day – ask questions at any time

Talks today

- Emma Moysey Ecology Australia (EA)
  - What are bogs?
- Neville Rosengren La Trobe University, Bendigo
  - Geology of region
  - Geomorphology of bogs
- Emma
  - Outline our study
  - Importance of bogs to fauna

Talks today (cont.)

- Geoff Carr (EA)
  - Importance of these systems floristically
  - Threats to bogs
- Matt White - (Arthur Rylah Institute for Environmental Research – ARIER)
  - Modelling methodology and outputs

Drs Angus Martin (Frog specialist) & Doug Robinson (Trust for Nature) will speak later.

What are bogs?

Restricted to areas where there is a near constant supply of surface or seepage water!

What are bogs?

Wetland types within the Goulburn Broken Catchment

- Sub-alpine peatlands
  - perched outcropping watertables
  - >1300m extensively in sub-alpine region
  - Peat often present
  - Lake Mountain, Mt Bullfight, Mt Stirling/Mt Buller

- Montane peatlands
  - perched outcropping watertables
  - >900m in granite tablelands
  - Peat often present
  - Higher parts of Strathbogies and Tolmie/Wabonga

What are bogs? (cont)

Wetland types within the Goulburn Broken Catchment

- Upland valley peatlands
  - subject to groundwater seepage on inactive terraces of rivers in high rainfall areas
  - Local accumulation of peat
  - e.g. Royston, Acheron Valley

- Upland swamps/springs
  - Perched outcropping watertables in granite tablelands
  - Often subhumid climate precludes peat development
  - e.g. Highlands, Strathbogies

What are bogs? (cont)

Wetland types within the Goulburn Broken Catchment

- Spring soaks
  - Seepage zones generally found on footslopes of granite landscapes
  - includes areas mentioned above and also Warbies, Tallarook and Mt Disappointment

Soak arising near top of rocky hillside, flowing into moist drainage line

Series of soaks on rock shelf parallel to stream, follows direction of joint in granite

Can be localised - May disappear into better drained soils downslope

Soak water at head of major gully head and stream complex

Broad soak in gently sloping outwash valley between granite hills

Linear moist drainage line soak

Series of soaks in ‘amphitheatre’-shaped catchment

Peat depth 20-30 cm - Highlands

Peat Bogs Study

The team

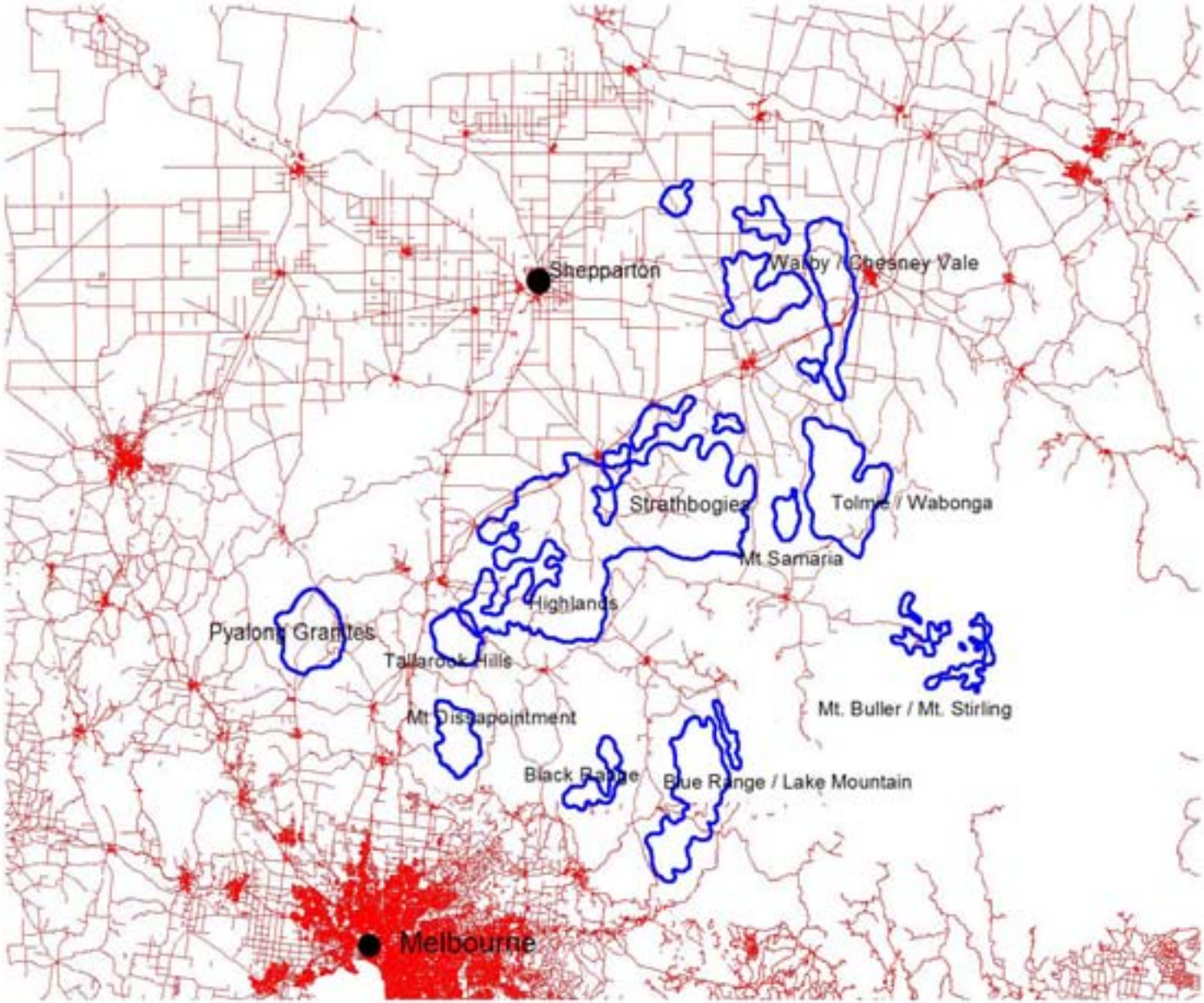
- Ecology Australia (EA): Geoff Carr, Emma Moysey, Steve Mathews - Ecologists
- Pathways: Bushland & Environment: Doug Frood - Consultant Botanist
- ARIER: Matt White - Senior plant ecologist
- Acromap: Dr Peter Griffioen - GIS programmer
- Dr Neville Rosengren – La Trobe University, Specialist geomorphologist
- Dr John Morgan – La Trobe University, Plant ecologist

Study area

Warby Ranges, Chesney Vale, Mt Samaria, Tallarook Hills, Pyalong granites, Mt Disappointment, Black Range, Blue Range, Mt Buller/ Mt Strathbogie Ranges, Tolmie, Highlands

Bioregions

- Central Victorian Uplands
- Highlands – Northern Fall
- Northern Inland slopes



Potential and known areas supporting Peatlands and Spring-soak Wetlands

80 0 80 Kilometers

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Methodology

- Data review
- Data collation
- Field survey
- Modelling of additional sites
- Model validation

Data Review

- **Existing data sets – Flora**
  - Ecological Vegetation Class (EVC) mapping
  - Flora Information System (FIS) Database (DSE)

- **Existing data sets – Fauna**
  - Atlas of Victorian Wildlife (DSE)
  - Aerial photography and documents of relevance to the area
- **State Forest Resource Inventory (SFRImap) dataset**
- **Published and unpublished literature**
- **Geomorphology**

Data Collation

- Outside project team i.e. GBCMA data, extension officers, DSE staff, Landcare groups, landholders etc
- Within project group i.e. John Morgan, DSE database (internal), Steve Mathews

Name	Organisation	Area of information
Bec Nicoll	GBCMA	Strathbogies, Mt Piper
Joanne Gaudion	GBCMA	Tatong, Barjarg
Christine Glassford	GBCMA	Yea; Crystal, Boggy, Stewarts, Woolshed Creek
Sue Berwick	DSE	Tawonga, Strathbogie Plateau
Geoff Barrow	Parks Victoria – Wangaratta	Warby Ranges/ Chesneyvale
Ray Thomas	DSE Benalla	Winton Glenrowan
Doug Robinson	Trust for Nature	Strathbogies
Mike Dexter	Upper Goulburn Field Naturalists	Upper Goulburn Catchment
Janet Haygen, Scott McKay	Hughes Creek Catchment Group	Hughes Creek Catchment
Bertram Lobert	Local field Naturalist	Euroa/Mt Barrahnet

Field survey

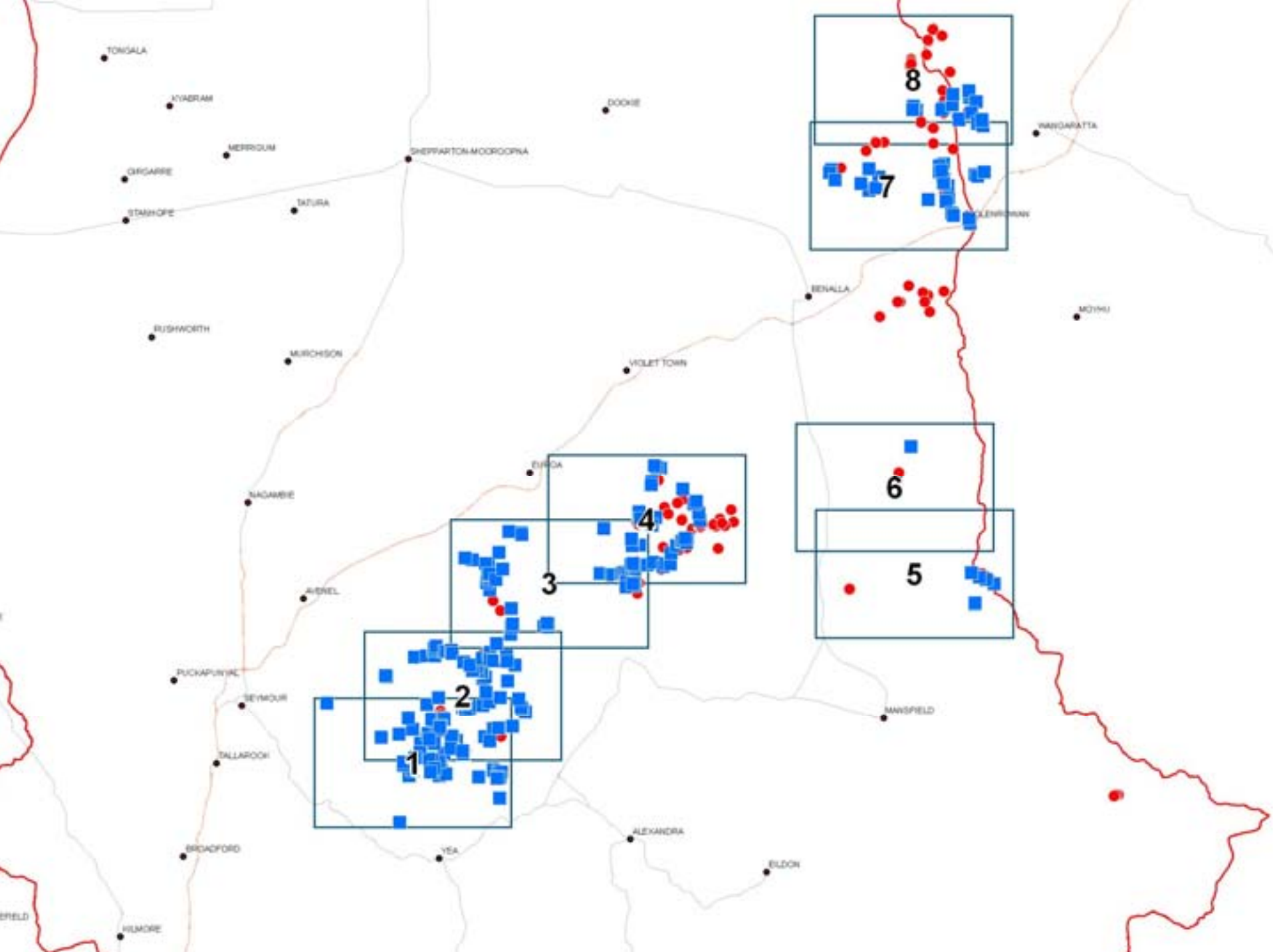
- Site access available - detailed surveys and assessment were conducted
- Site access unavailable – location of wetland noted, and brief field notes taken

Information collected

- GPS central location
- Mapped extent of wetland area
- Dominant plant species list
- Aspect, slope
- General condition
- Management issues:
  - Grazed by sheep/cattle, marsupials
  - Fenced?
  - Serious environmental weeds present
- Site description, including geomorphological/hydrological context, and EVC typology
- Digital photos of each wetland surveyed

Findings

- Data collation - 174 sites
- Field surveys - 250 sites


TONGALA
KYABRAM
DOOKIE
MERRIGUM
SHEPPARTON-MOOROOPNA
GRIGARRIE
STANHOPE
TATURA
WANGARATTA
BENALLA
MOYHU
RUSHWORTH
MURCHISON
VIOLET TOWN
EVERGA
NAGAMBIE
AVENEL
PUCKAPUNYAL
SEYMOUR
MANSFIELD
TALLAROOK
ALEXANDRA
BROADFORD
YEA
EILDON
KILMORE
1
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3
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What values to Bogs hold?

Fauna - Use of wetlands/soaks

- localised/general habitat use
- drink at these sites only
- forage at these sites only
- provide refuge in drought periods

Fauna - Summary

Vertebrate Group	Total	Use of wetlands for part life/history
Birds	233 (*11)	44
Mammals	40 (*8)	4
Reptiles	38	8
Frogs	10	10
Fish	16 (*6)	0
Invertebrates	2	1
TOTAL	**339**	**67**

Significant species - fauna

EPBC	DSE	FFG	Common Name	Guild	LRO
	NT		Brown Quail	lh	L
	NT	L	Diamond Dove	d	L
	NT		Latham's Snipe	lh	M
	NT		Glossy Ibis	f	L
	NT		Spotted Harrier	f	M
	VU	L	Glossy Black-Cockatoo	d	L
VU	EN	L	Superb Parrot	d	L
	NT	L	Turquoise Parrot	d,f	L
EN	EN	L	Swift Parrot	d,f	L
	VU	L	Diamond Firetail	gh	L
	EN		Brown Toadlet	lh	M
	DD	L	Rugose Toadlet	lh	M

Flora

- Large suite of vascular and non-vascular plant species occur in these wetlands
- ~ 180 flora species of moderate – high fidelity to these wetlands
- Rare habitats that are of high conservation significance

Significant species – Flora

Name		DSE status	Fidelity to peatland vegetation		
Scientific	Common		L	M	H
Baumea planifolia	Rough Twig-sedge	k			*
Eriocaulon scariosum	Common Pipewort	r			*
Goodenia macbarronii	Narrow Goodenia	V v	*		
Eucalyptus cadens	Warby Range Swamp-gum	E e			*

EVC typology

Sub-alpine zone (highest altitudes - e.g. Lake Mountain)

171 Alpine Fen

210 Sub-alpine Wet Heathland

288 Alpine Valley Peatland

Montane elevations (e.g. Lake Mountain, Blue Range)

40 Montane Riparian Woodland

41 Montane Riparian Thicket

148 Montane Sedgeland

966 Montane Bog (still as EVC 318 Montane Swamp in Highlands Northern Fall bioregion)

Foothills to lower montane (e.g. Strathbogies, Highlands, Warby Ranges)

73 Rocky Outcrop Shrubland / Rocky Outcrop Herbland Mosaic

80 Spring-soak Woodland

83 Swampy Riparian Woodland

185 Perched Boggy Shrubland

191 Riparian Scrub

728 Forest Creekline Sedgy Swamp

937 Swampy Woodland

High quality wetland - Button Grass, Highlands

Spring soak on outwash - Warby Ranges, heavily grazed , high significance. Red Gum and Grey Box tree dominants

Very high quality Montane Riparian Woodland - Tolmie Plateau - Mountain Swamp Gum, sedgy understorey

Sphagnum was observed in one site of excellent quality in Highlands

Threats

- Weed invasion
- Draining of wetlands
- Dam construction
- Clearing
- Stock grazing
- Tree planting/plantations

Herbaceous weeds	
Agrostis stolonifera	Creeping Bent
Anthoxanthum odoratum	Sweet Vernal-grass
Dactylis glomerata	Cocksfoot
Festuca arundinacea	Tall Fescue
Glyceria maxima	Reed Sweet-grass
Holcus lanatus	Yorkshire Fog
Juncus articulatus	Jointed Rush
Lotus corniculatus	Bird's-foot Trefoil
Lotus uliginosus	Greater Bird's-foot Trefoil
Mentha pulegium	Pennyroyal
Mimulus moschatus	Musk Monkey-flower
Paspalum distichum	Water Couch
Phalaris aquatica	Toowoomba Canary-grass
Poa pratensis	Kentucky Blue-grass
Ranunculus repens	Creeping Buttercup

Woody Weeds	
Crataegus monogyna	Hawthorn
Hedera helix	Ivy
Lonicera japonica	Japanese Honeysuckle
Pinus pinaster	Cluster Pine
Pinus radiata	Radiata Pine
Populus spp.	Poplar
Prunus cerasifera	Cherry Plum
↘ *Rubus anglocandicans*	Blackberry
↘ *Rubus fruticosus* spp. agg.	Blackberry
↘ *Salix cinerea* ssp. *cinerea*	Grey Willow
↘ *Salix* x *sepulcralis* nothovar *sepulcralis*	Weeping Willow

THREAT: Weed invasion

Woolly Tea-tree, invasion by Reed Sweet-grass

THREAT: Weed invasion

Former Montane Riparian Woodland - cleared planted with Reed Sweet-grass & Willows

THREAT: Weed invasion

Prickly Tea-tree - spring soak invaded by Maritime Pine

THREAT: Draining of Wetlands

Montane Riparian Woodland & Spring soaks - Mountain Swamp Gum. Rushes show extent.


THREAT: Dam Construction


THREAT: Dam Construction
3 dams on 1 spring soak system

THREAT: Clearing

Extensive clearing - Prickly Tea-tree

THREAT: Stock grazing

Cross-fence comparison – Common Reed

THREAT: Stock grazing


THREAT: Stock grazing

Fencing and revegetation works

Recruitment after fencing

THREAT: Tree planting / plantations

Montane Riparian Thicket – surrounded by pine plantation – Tolmie plateau

Model – Methodology & Outputs

THANK YOU!!

- Peg and Doug Lade for their hospitality
- Bec Nicoll and Simon Casanelia GBCMA for organizing the day and for funding our work
- All landholders who provided us information and access to your bogs!
- To all of you who have come today!