Ecosystem condition – discussion questions and background

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Questions for discussion

- What is the purpose of the condition account?

- How do ecosystem condition indicators relate to the ecological production function approach?

- Are the characteristics of condition set out in the SEEA EEA the key ones and are they workable

- How to aggregate the characteristics of condition across an ecosystem and across different ecosystem types in a meaningful way?

Background – SEEA-EEA

Paragraph 2.31

"Ecosystem assets are spatial areas comprising a combination of biotic and abiotic components and other characteristics that function together. Ecosystem assets are measured from two perspectives—that of ecosystem condition and ecosystem extent; and that of ecosystem services."

Purpose of condition accounts

Two views, both related to sustainability:

1. Measure the state of the ecosystems and ensure the ecosystems continue to provide services to people (anthropocentric)

2. Measure ecosystem in terms of its ability to continue to function without reference to human use (non-anthropocentric)

How do ecosystem condition indicators relate to the ecological production function approach?

- Ecosystems in different condition produce a different range of inputs

- In practice the variables needed for the specification of the ecological production function will range widely and will need to include a variety of other information. For example, management practices and protected area status

Are the characteristics of condition set out in the SEEA EEA the key ones and are they workable?

	y				
	Vegetation	Biodiversity	Soil	Water	Carbon
	Examples of indicators				

Extent *as a measure of condition*

Landscape characteristics – size, shape and location of vegetation "patches"

Site level vegetation characteristics – vegetation structure (e.g. understory), recruitment, tree hollows, weed species, etc

Soil characteristics – amount of exposed soil

How to aggregate the characteristics of condition across ecosystem types?

- Aggregated indicators of condition are wanted and have been produced

- For the non-anthropocentric perspective ecosystem modified by humans are in poor condition (i.e. cities and farmland = low values)

- For the anthropocentric perspective the relationship to services and sustainability of services is key (hence capacity, capability and potential)
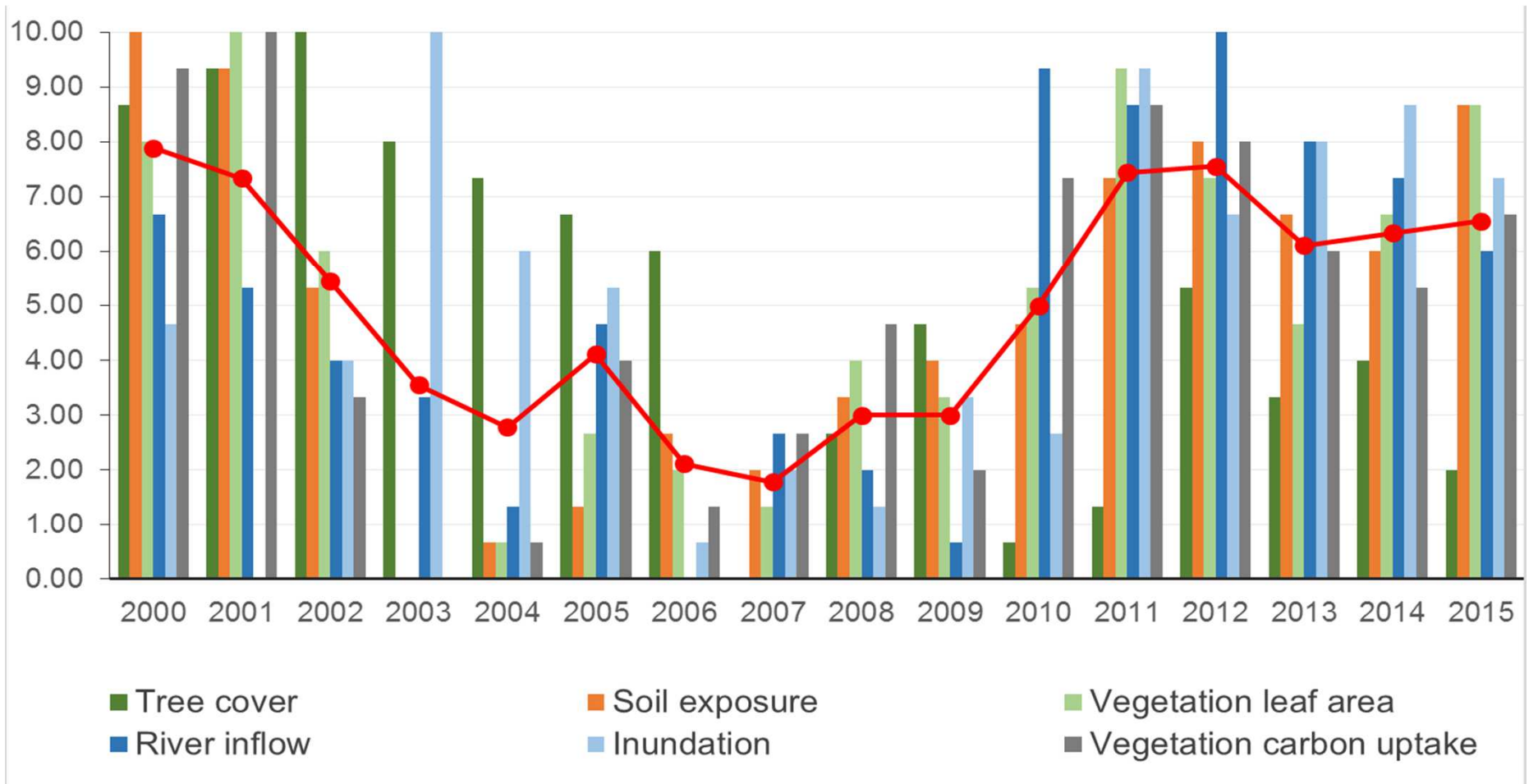
	Ecosystem extent	Ecosystem condition								
		Characteristics								
	Extent	Vegetation	Biodiversity	Soil	Water	Carbon	Marine	Site condition	Wetlands	Composite indicator
Australian Capital Territory	By ecosystem type for all of ACT	Tree cover, land cover, leaf area, vegetation carbon uptake (gross primary production)		Soil exposure, soil moisture	Runoff, inundation, river flow		NA			Environment condition score (6 indicators)
Central Highlands	By ecosystem type for all of area	Net primary production	Hollow bearing trees		Runoff		NA			Age since disturbance*
Great Barrier Reef	By ecosystem type for subdivisions within area	Net primary productivity			Water quality (sediment, N and P loads)		Hard coral cover, water quality, seagrass cover, Fish abundance			No
Victoria experimental ecosystem accounts	By ecosystem type for subdivisions within area		Large trees, Tree (canopy) cover, lack of weeds, recruitment, Patch size, neighborhood, distance to core area					Large trees, Tree (canopy) cover, lack of weeds, recruitment, organic litter, logs		Habitat hectare (10 indicators)
Wentworth Group	By native vegetation type	Extent, composition, configuration			Chemical index		Species abundance (e.g. dugongs)		Extent, Composition	Econd (combination of all indicators)
Valuing Victoria's Parks	By native vegetation type									Habitat hectare (10 indicators)

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Environmental condition score - ACT

Australia's Environment http://wenfo.org/aus-env/#/
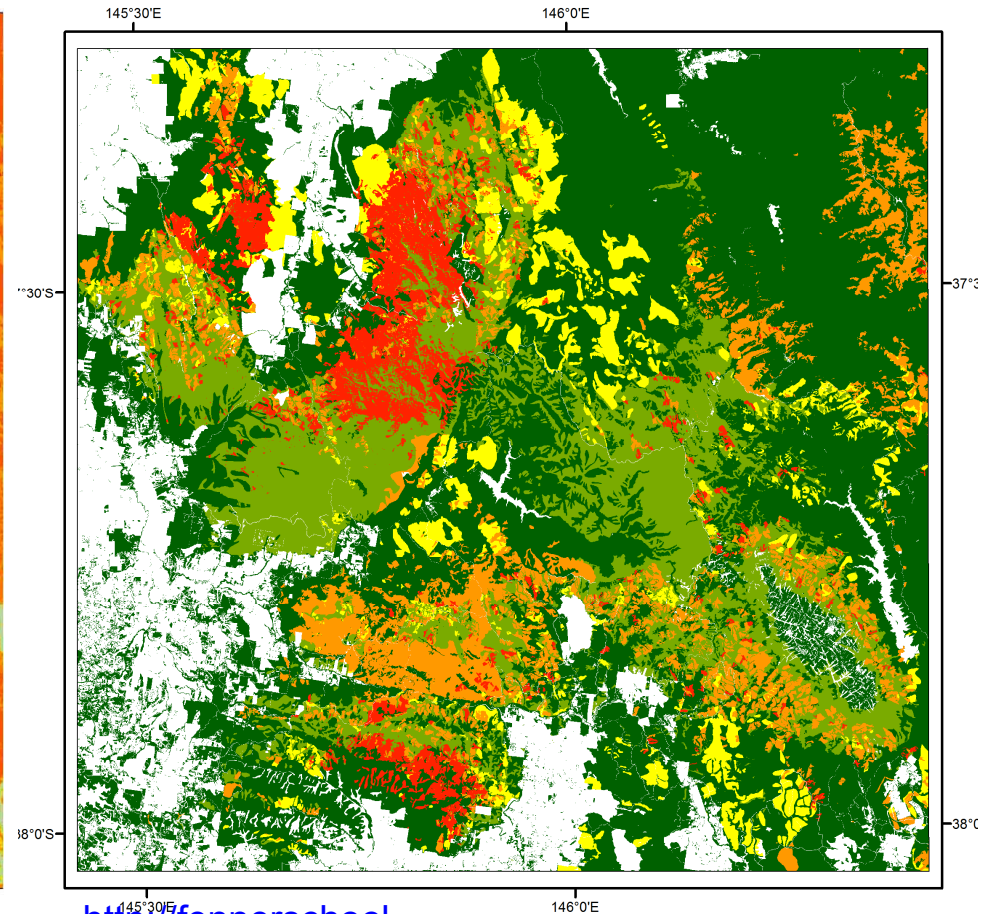
Ecosystem condition – habitat hectare
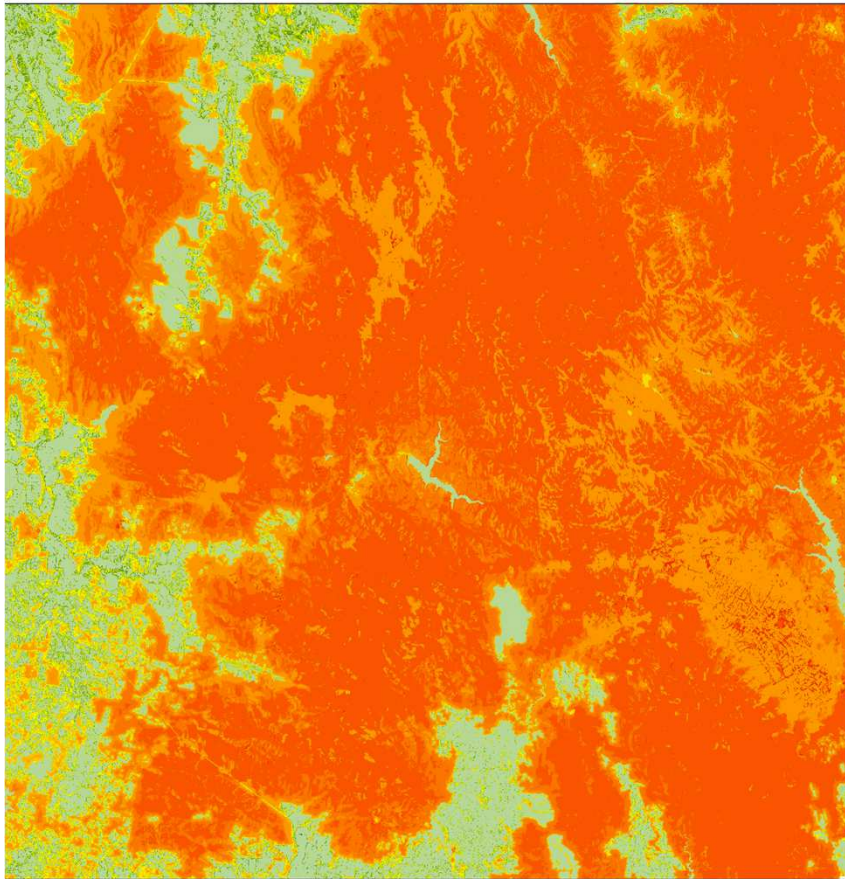
After Eigenraam et al 2013
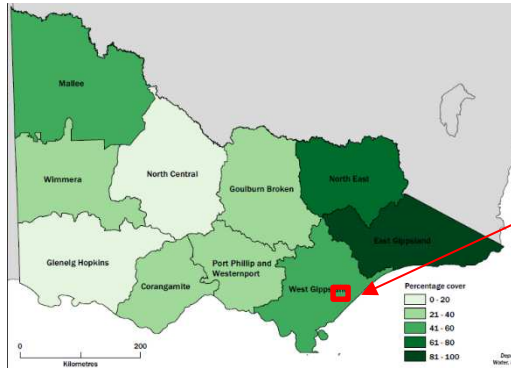
Forest condition – age since disturbance

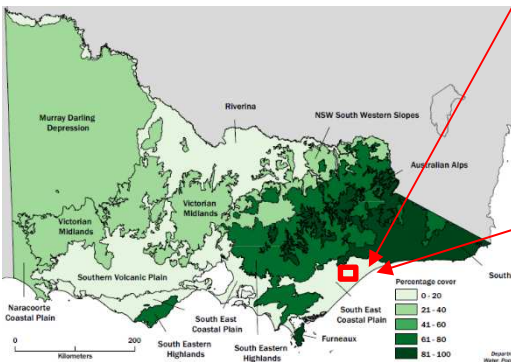http://fennerschool-associated.anu.edu.au/documents/Ecosystem_Accoun s_full_report_v1.pdf
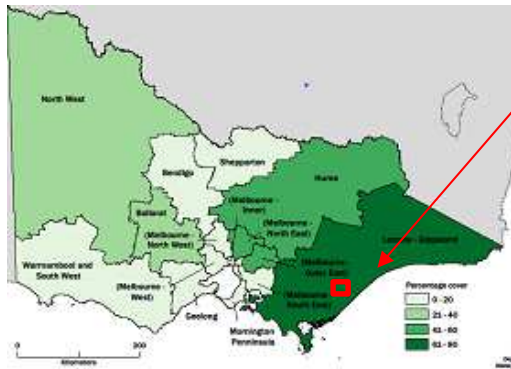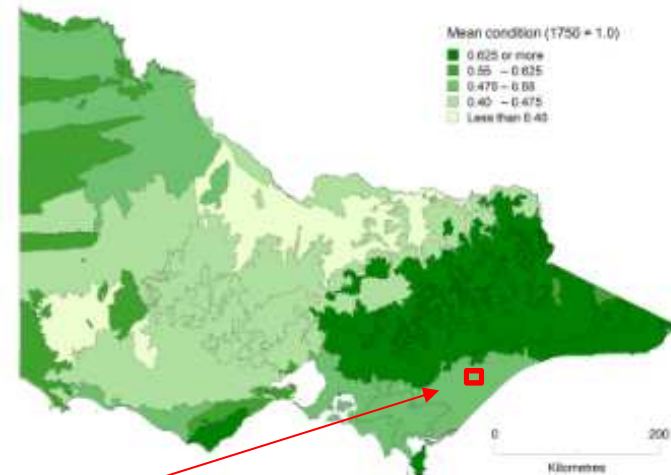
Percent native vegetation remaining 2006 (ABS Land Account, Victoria)

Same red square different score

Condition of native vegetation in 2006

Same area, different metric, different score

Where to?

Catalogue and review the characteristics and indicators used for ecosystem condition so far.

- Begun in Australia and UK

- Are others interested in contributing to an expanded exercise?

How do the thematic accounts of water, carbon and species level biodiversity related to the condition accounts?