WENTWORTH GROUP

OF CONCERNED SCIENTISTS

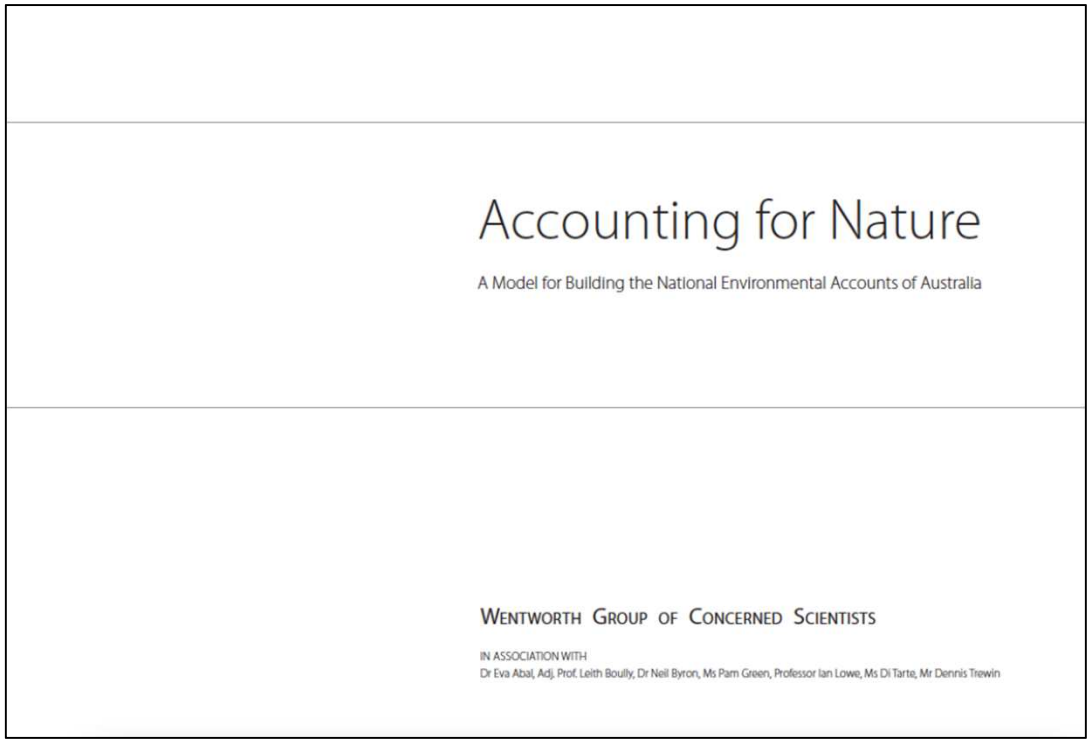
Multiscale Environmental Asset Condition Accounts for Australia

CARLA SBROCCHI

Wentworth Group of Concerned Scientists

Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets



Publication

Accounting for Nature (2008) which proposed an environmental accounting framework based on:

- Asset condition
- Multilevel assessments (local to national)
- Multi-institutional
- Ongoing
- All environmental assets
- 'Common currency' - Econd

Accounting for Nature provides physical, ongoing measures of environmental asset condition for decision-making

Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

Establish

- Committees
- Standards for Data and Processes

Develop

- Guidelines
- Accounts tables templates
- Information statements (metadata)
- Technical Papers
- Accreditation standards

Integrate

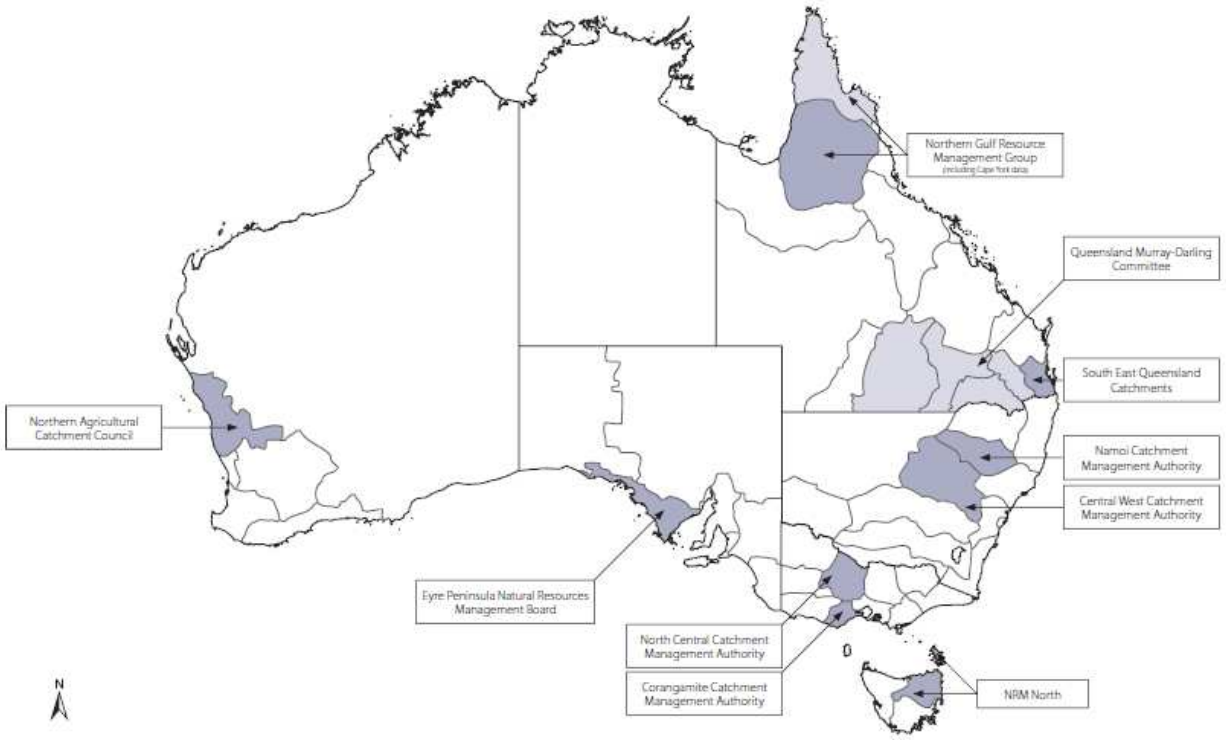
- Science
- Accounting
- Economics

Scope of Trial

Develop and test processes and operational aspects of implementing *Accounting for Nature* to inform a national approach.

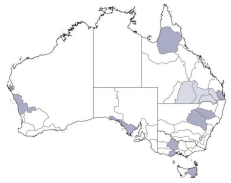
Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets



Context

- Continental scale
  (10 test regions)
- Range of assets
- Assets of significance to communities (production and conservation)
- Unique characteristics required unique indicators
- Limited resourcing
- Existing data sources



Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

	LAND			FRESHWATER				COAST	MARINE	
REGION	Vegetation*	Fauna*	Soil	Rivers	Wetlands	Groundwater	Floodplains	Estuaries	Fauna*	Other
Central West Catchment Management Authority (NSW)	■	■					■			
Corangamite Catchment Management Authority (VIC)	■				■					
Natural Resources Eyre Peninsula (SA)	■								■	
Northern Agricultural Catchments Council (WA)	■	■								
Namoi Catchment Management Authority NSW)	■					■				
North Central Catchment Management Authority (VIC)	■			■	■					
Northern Gulf Resource Management Group (QLD)	■									
NRM North (TAS)				■				■		
Queensland Murray-Darling Committee (QLD)	■	■	■	■	■					
SEQ Catchments (QLD)	■	■		■	■			■	■	■

*Native only. Birds. Southern Right Whales. Dugongs. Morten Bay Fisheries.

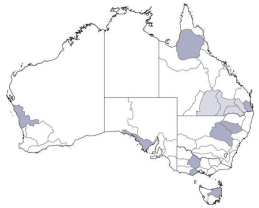
Data sources

- Federal agencies
- State agencies
- Research agencies
- Consultants to natural resource managers
- Landholders

➢ Synthesized at the regional management level

➢ Results aggregated to:

- levels (regional, national) and
- scales (individual assets, asset classes, catchments)



Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

Freshwater - Rivers

Summary Table

Class	Asset	Region	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
FRESHWATER	Rivers	North Central CMA (VIC)	48					34							48
		NRM North (TAS)													73
		Queensland Murray Darling Basin (QLD)									64			68	
		SEQ Catchments (QLD)					74				70	76	78	79	81

NORTH CENTRAL Catchment Management Authority
Connecting Rivers, Landscapes, People

REGIONAL ASSET ACCOUNT
NORTH CENTRAL CMA, VICTORIA

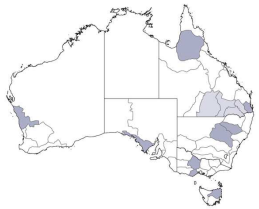
Summary Table

Class	Asset	**Econd** & ICS	1999	2004	2006	2010
LAND	Native Vegetation	**Econd**			**14**	
		Extent (Ha)			32	
		Composition/Configuration (Hha)			40	
FRESHWATER	Rivers	**Econd**	**48**	**34**		**48**
		Hydrology	63	48		43
		Physical Form	43	49		68
		Streamside Zone	50	58		56
		Water Quality	58	62		51
		Aquatic Life	63	62		45
	Wetlands	**Econd**			**56**	
		Wetland Condition (Index)			**56**	

Eyre Peninsula, South Australia

Asset Table

NATIVE VEGETATION ASSET ACCOUNT - EYRE PENINSULA, SOUTH AUSTRALIA - 2012						
Government of South Australia Eyre Peninsula Natural Resources Management Board		Regional Area (hectares)	Regional Indicator Condition Score (Extent)	Regional Indicator Condition Score (Composition)	Regional Indicator Condition Score (Configuration)	Regional ***Econd*** Extent x (Comp+Config/2)
		5,130,353	47	60	47	**25.0**
Asset Category	Indicator of Asset Condition (unit of measure)	Reference Benchmark	% Total Area	2012 Condition Measure	2012 Indicator Condition Score	***Econd***
Eyre Peninsula Region		5,130,353				25.0
Arid & semi-arid acacia low open woodlands & shrublands with						62
	Extent (Ha)	186,558	3.6	165246	89	
	Composition (index)	100		66.30	66	
	Configuration (index)	100		73.62	74	
Arid & semi-arid hummock grasslands						11
	Extent (Ha)	23,320	0.5	5013	21	
	Composition (index)	100		59.67	60	
	Configuration (index)	100		46.67	47	
Callitris forests & woodlands						42
	Extent (Ha)	23,320	0.5	17595	75	
	Composition (index)	100		62.80	63	
	Configuration (index)	100		48.17	48	
Casuarina & Allocasuarina forests & woodlands						7
	Extent (Ha)	233,198	4.5	30911	13	
	Composition (index)	100		54.40	54	
	Configuration (index)	100		50.67	51	
Chenopod shrublands						52
	Extent (Ha)	233,198	4.5	190628	82	
	Composition (index)	100		61.16	61	
	Configuration (index)	100		66.01	66	



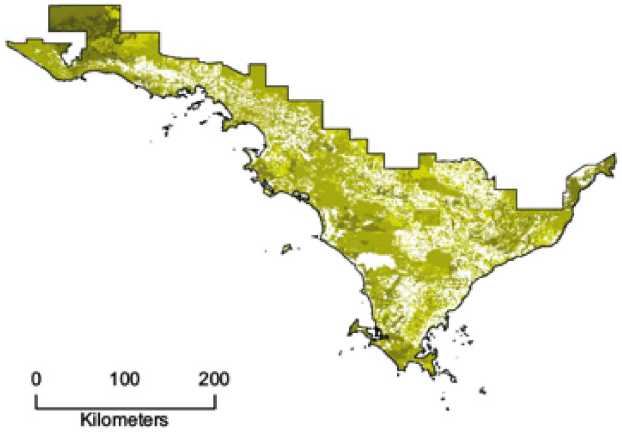
Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

2 = Reasonable	1. Extent measures provided for most regional native vegetation types; and→	2. Where expert judgment has been used to estimate the composition of each native vegetation type.	3. At minimum, a basic patch metric has been calculated for each vegetation type. If the vegetation type has been affected by fire or INS, then an indicator of fire or INS configuration is also required.
1 = Minimal	Extent measures provided for some regional native vegetation types where; 1. Native vegetation communities have not been significantly altered by changed fire regimes, clearing, grazing, weed invasion or other disturbances which may not be represented by an extent measure alone; and →	2. Where expert judgment has been used to estimate the composition of each native vegetation type.	3. At minimum, a basic patch metric has been calculated for each vegetation type. If the vegetation type has been affected by fire or INS, then an indicator of fire or INS configuration is also required.
0 = Not Accredited	An account cannot be accredited if native vegetation extent data alone is provided but: 1. Woody vegetation communities are known to be significantly degraded by clearing of understory, grazing or weed invasion; 2. Grassland (non woody) vegetation communities are known to be significantly degraded by grazing or weed invasion (eg grasslands dominated by improved pastures); or 3. Vegetation communities are known to have been significantly altered by changed fire regimes (eg invasive native scrub in western NSW).		

http://www.epnrm.sa.gov.au/

Eyre Peninsula SA
NATIVE VEGETATION



YEAR
2012

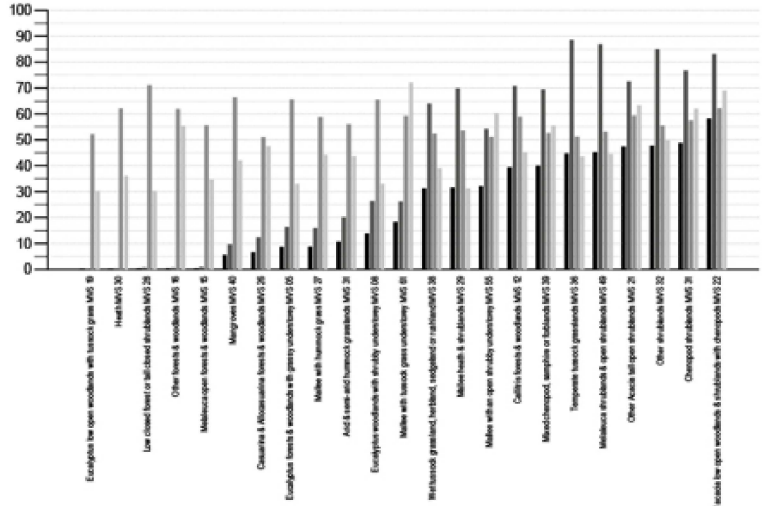
km²
80,000

55,000

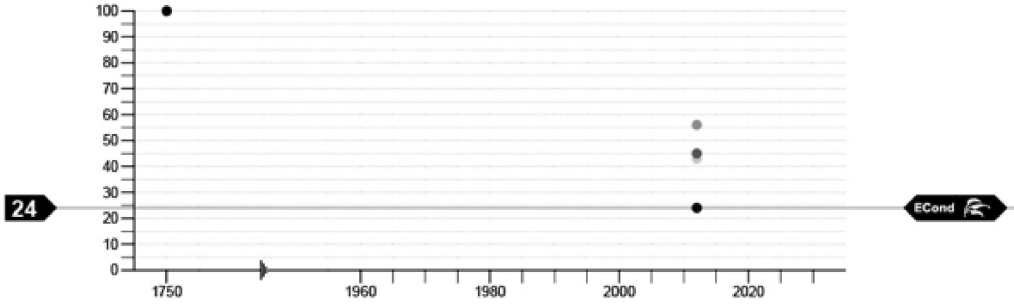
Whyalla
Port Lincoln
Ceduna

Map Key
0-20
21-40
41-60
61-80
81-100

Indicator Condition Scores

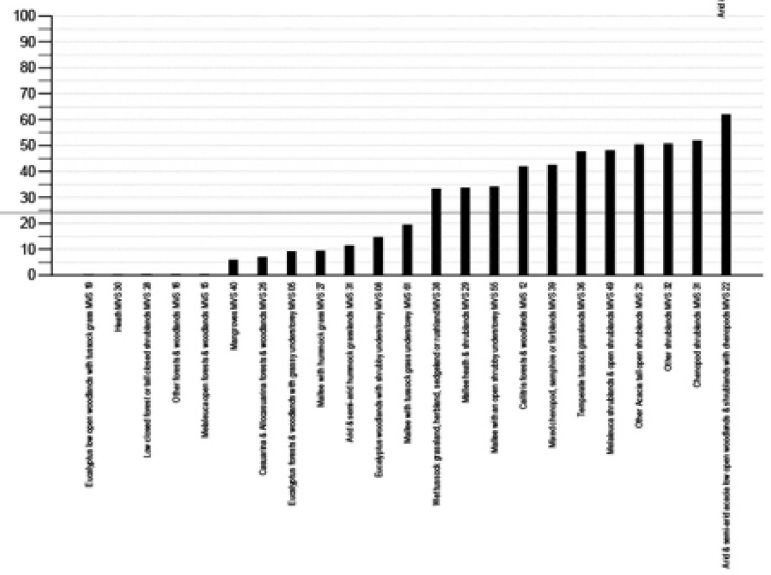


Change in Condition



ECond

ECond

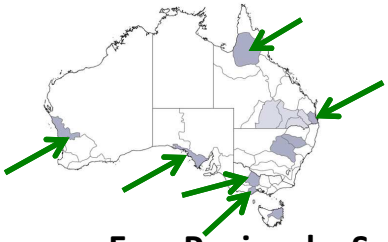


Government of South Australia
Eyre Peninsula Natural Resources Management Board

Graph Legend
ECond = 24
Extent = 45
Composition = 56
Configuration = 43

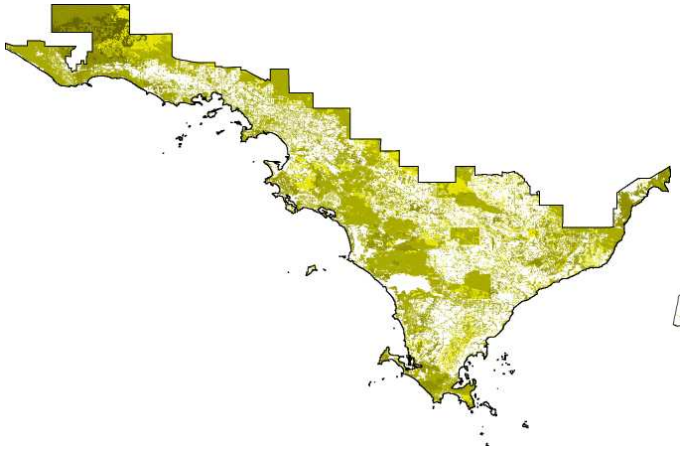
*Composition and Configuration is HHa

Proof of Concept Accounts 2013. For more information visit http://wentworthgroup.org/regional-environmental-accounts/by-regions/

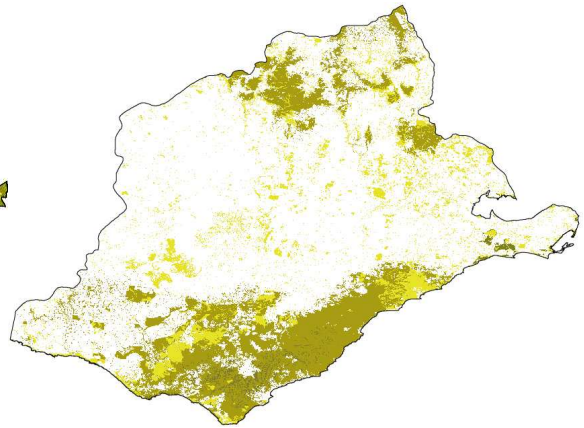


Condition of Remaining Vegetation

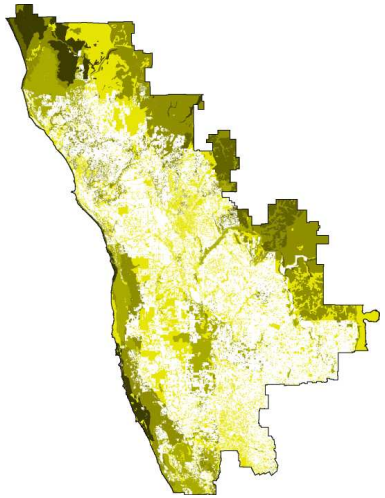
Eyre Peninsula, South Australia



Corangamite CMA, Victoria

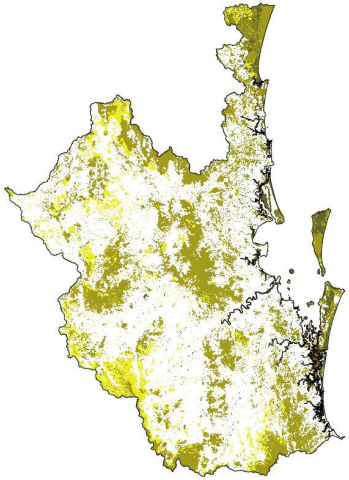


Northern Agricultural, WA

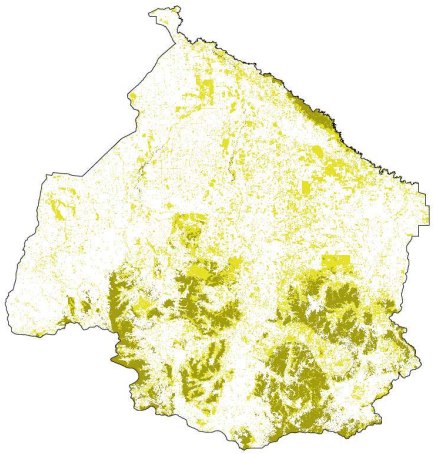


Northern Gulf-Cape York Peninsula

SEQ Catchments, Queensland

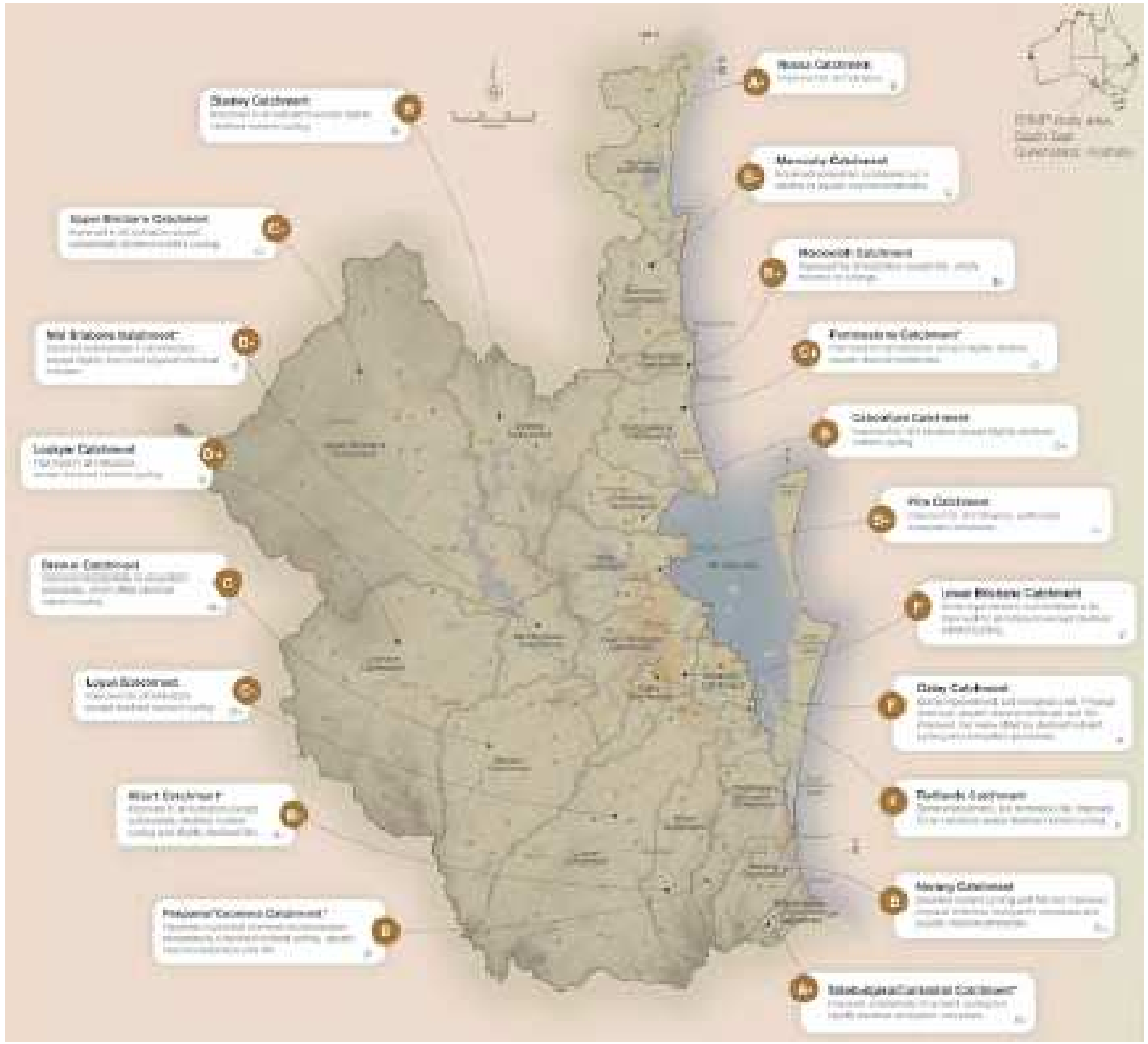


North Central, Victoria



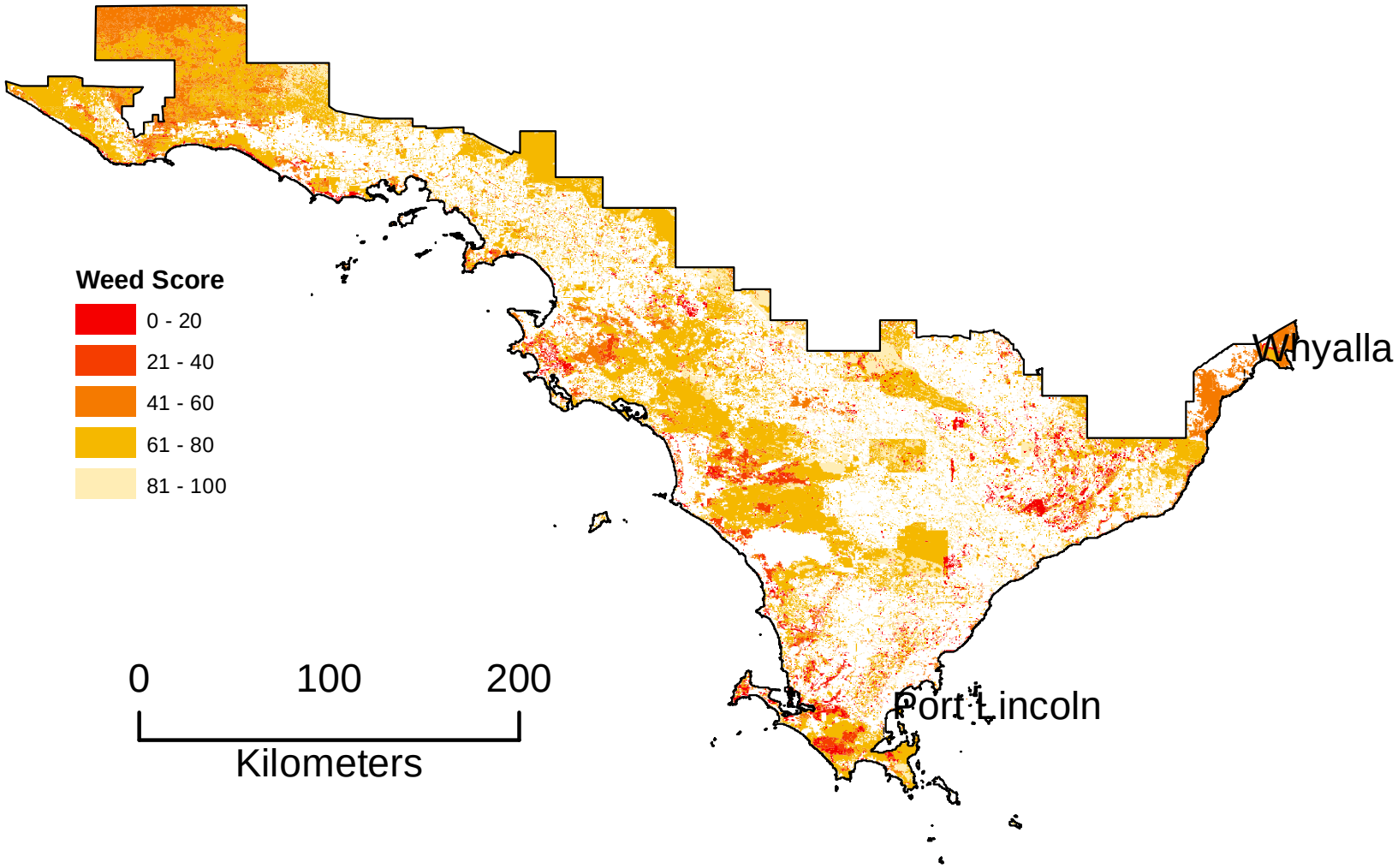
Healthy Waterways Partnership

Report Cards



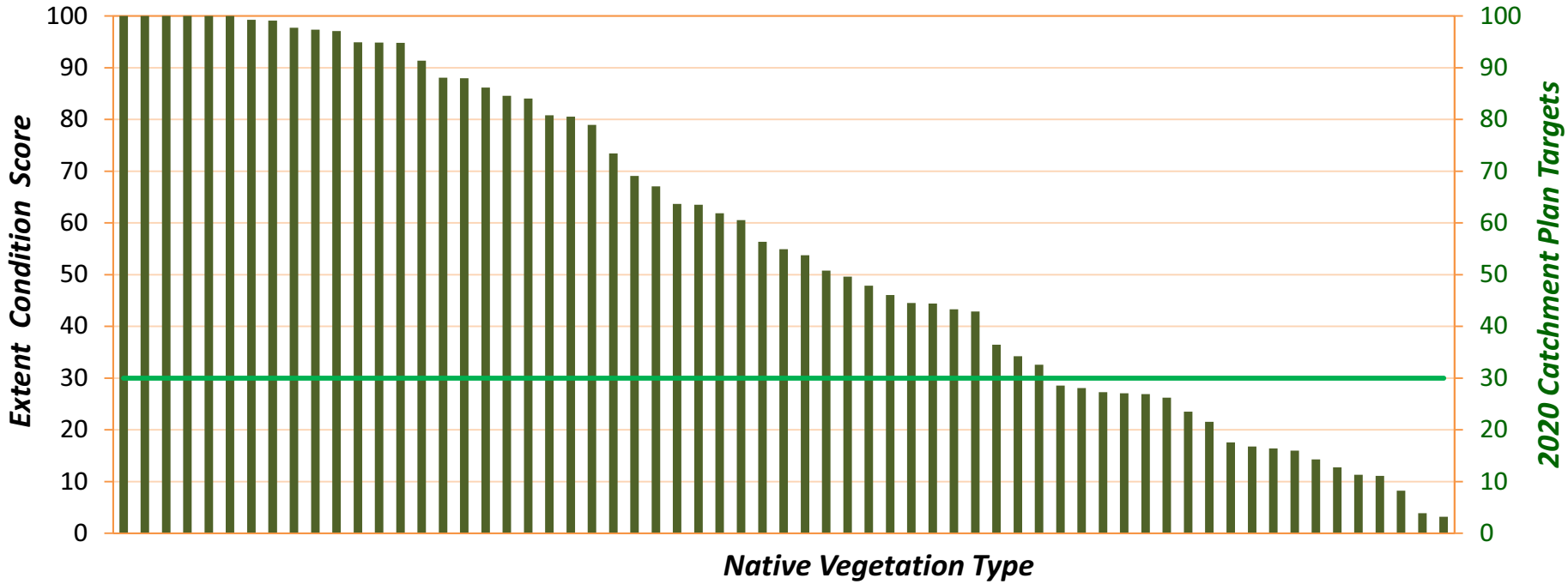
Eyre Peninsula, South Australia

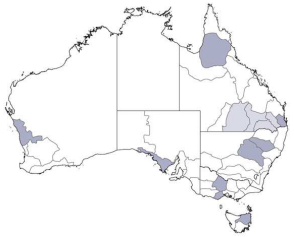
Pressures



Namoi Catchment Management Authority, NSW

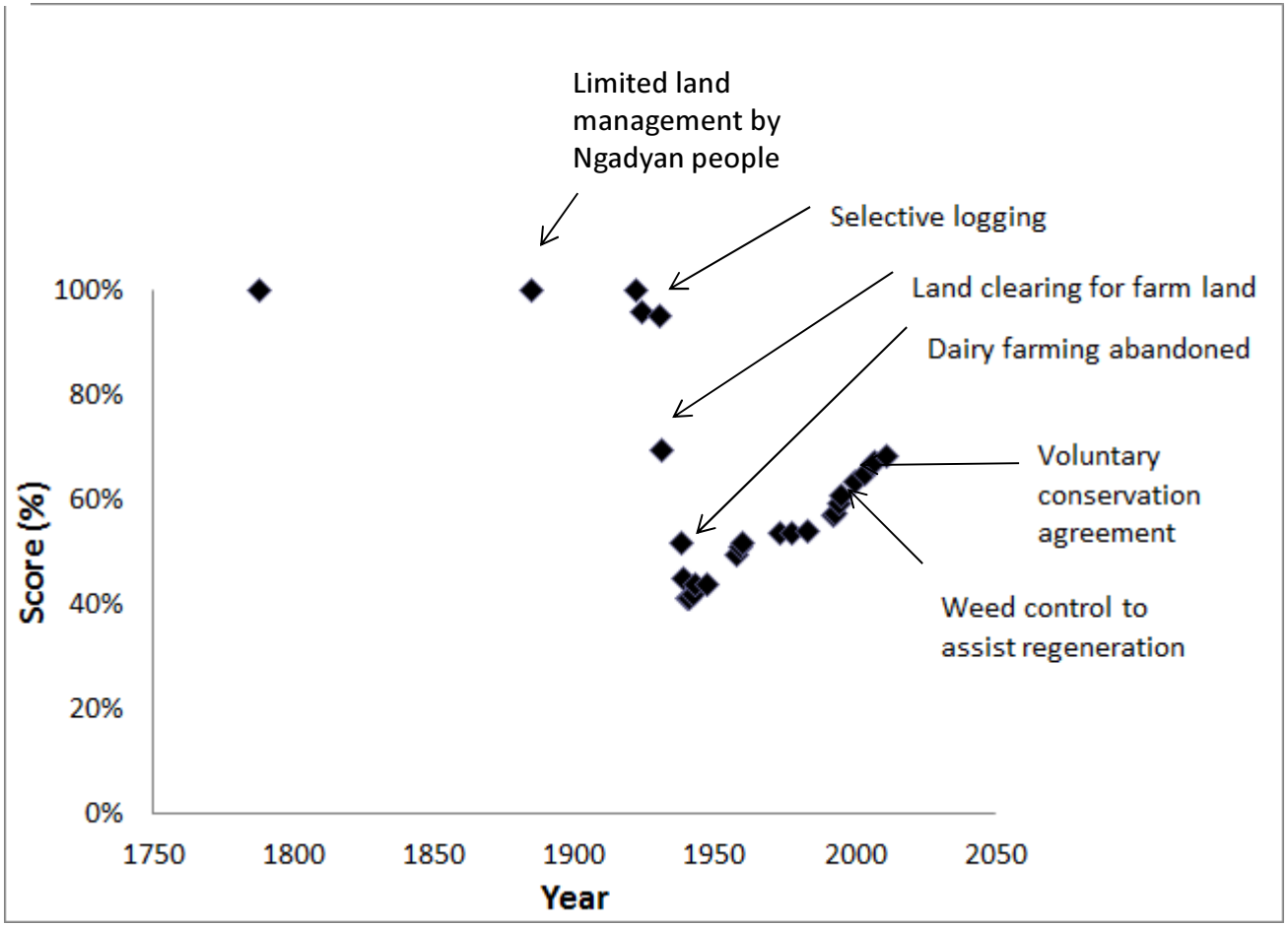
Setting Policy Objectives



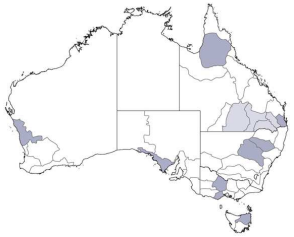


Wooroonooran Nature Refuge, QLD

Effectiveness of management interventions



Source: Richard Thackway, VAST

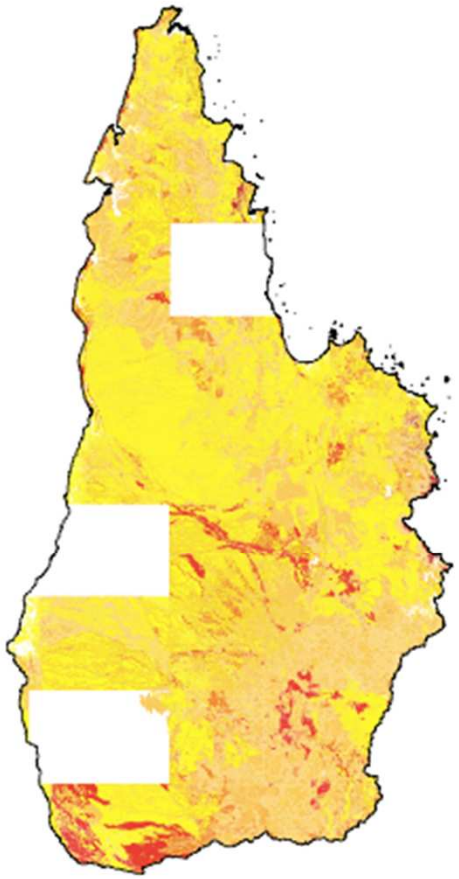


Northern Gulf-Cape York, QLD

Effectiveness of management interventions

Fire ICS

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100



Coastal heathlands

Expected time since last fire (years	**μe**	**15**
Observed time since last fire (years	**μo**	**4.263**
METRIC 1 - TSLF: RESULT (/100)		**28.42063**

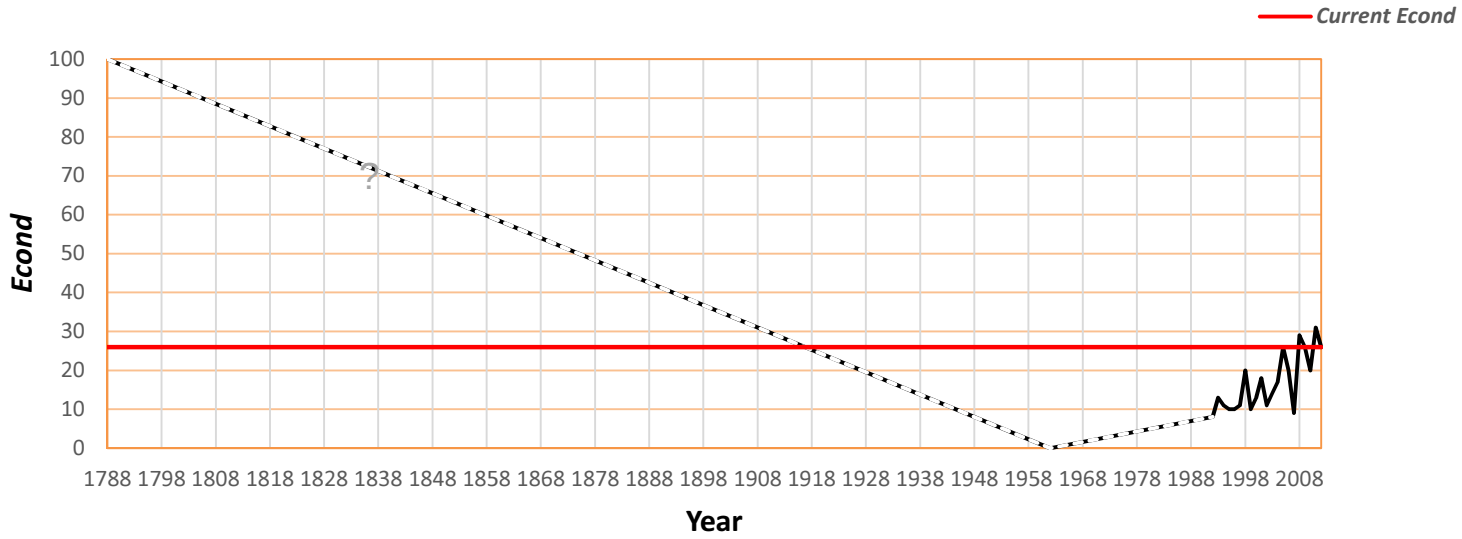
Eucalpyt forests on floodplains

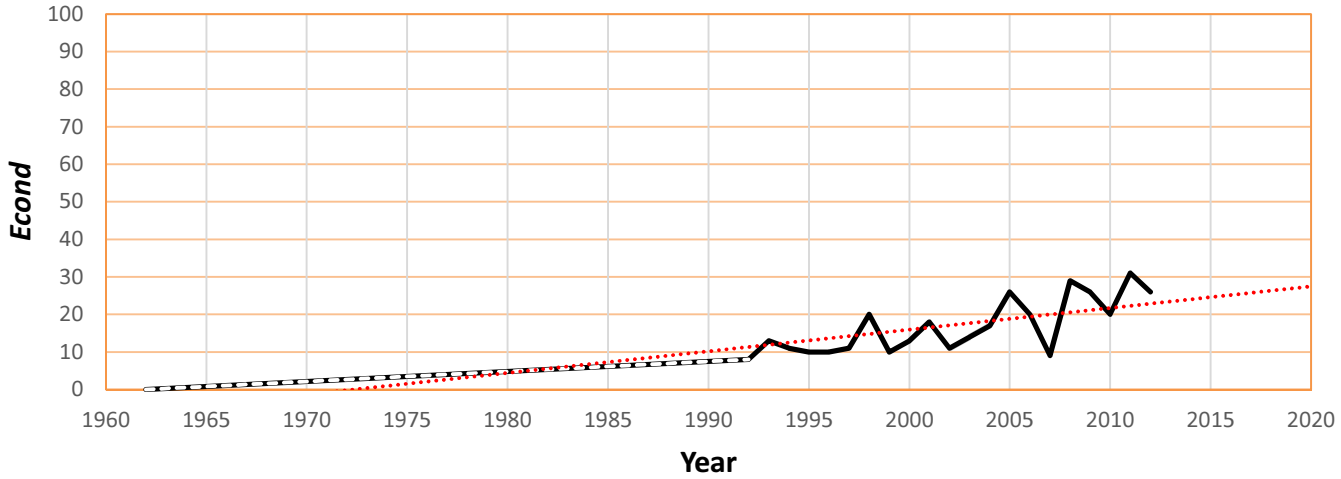
Expected time since last fire (years	**μe**	**4**
Observed time since last fire (years	**μo**	**5.280**
METRIC 1 - TSLF: RESULT (/100)		**67.99205**

0 500 1,000

Kilometers

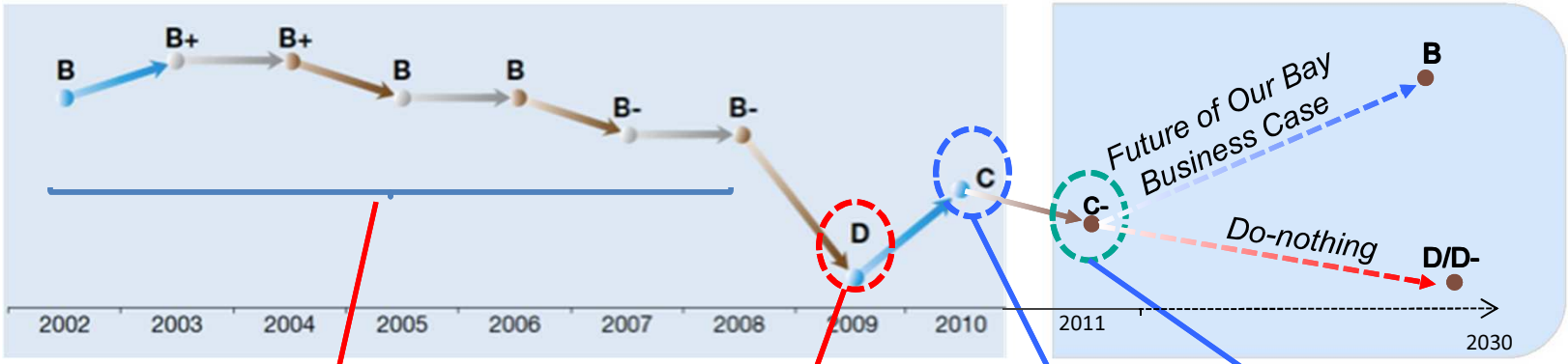
Southern Right Whales
Monitoring Policy Objectives





Moreton Bay Ramsar Site, QLD

Monitoring Policy Objectives



Moreton Bay held on to a '*Good*' rating in spite of increase in population – significant investments in sewage treatment.

High rainfall after a decade of drought ➔*A decade's worth of sediment, nutrients and other contaminants was flushed downstream*.

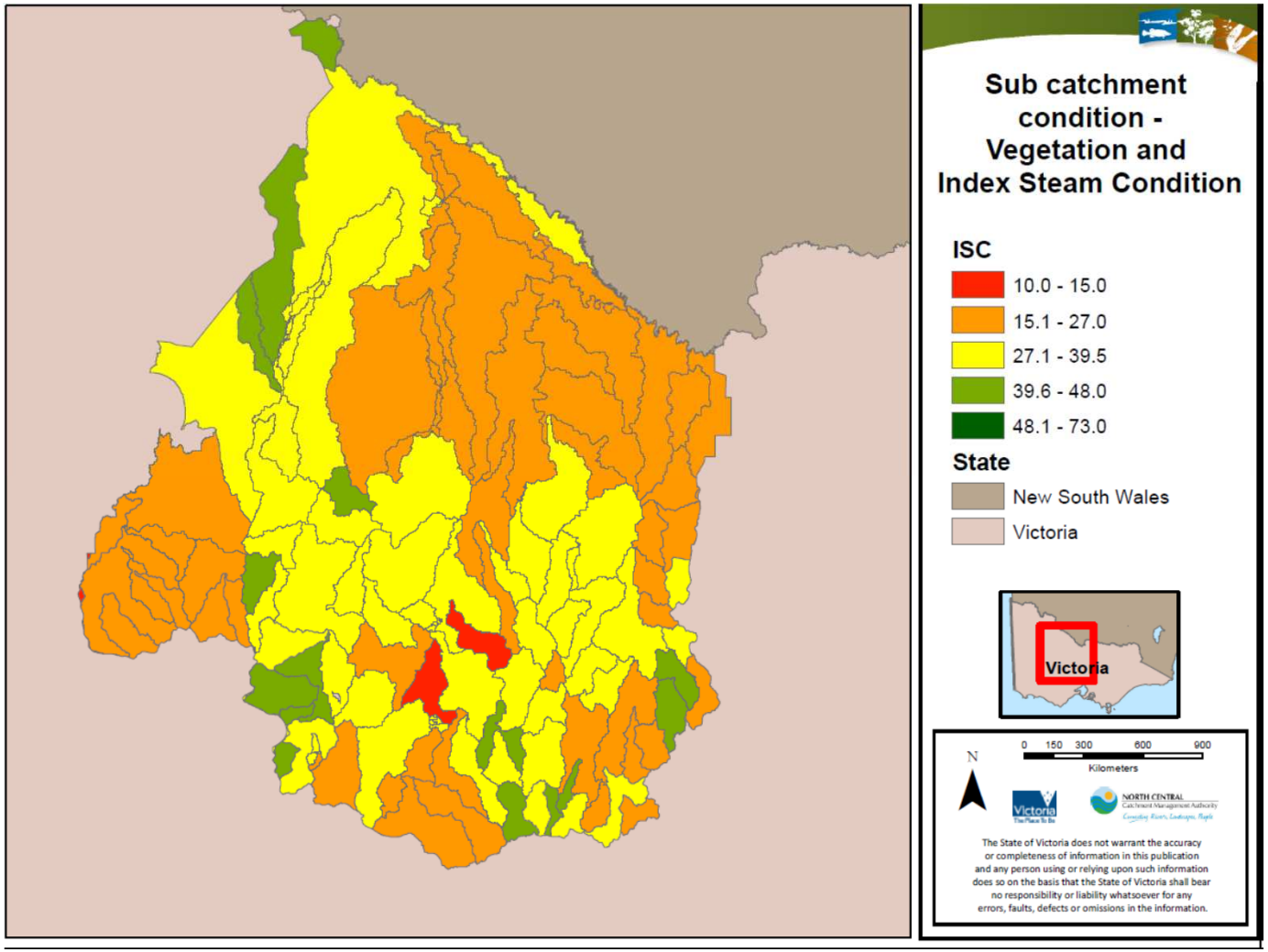
Bay recovered slightly, but still lower than average

2011 Flood came on top of this recovery

Source: Assoc. Prof. Eva Abal

North Central CMA, VIC

Prioritising Management Actions

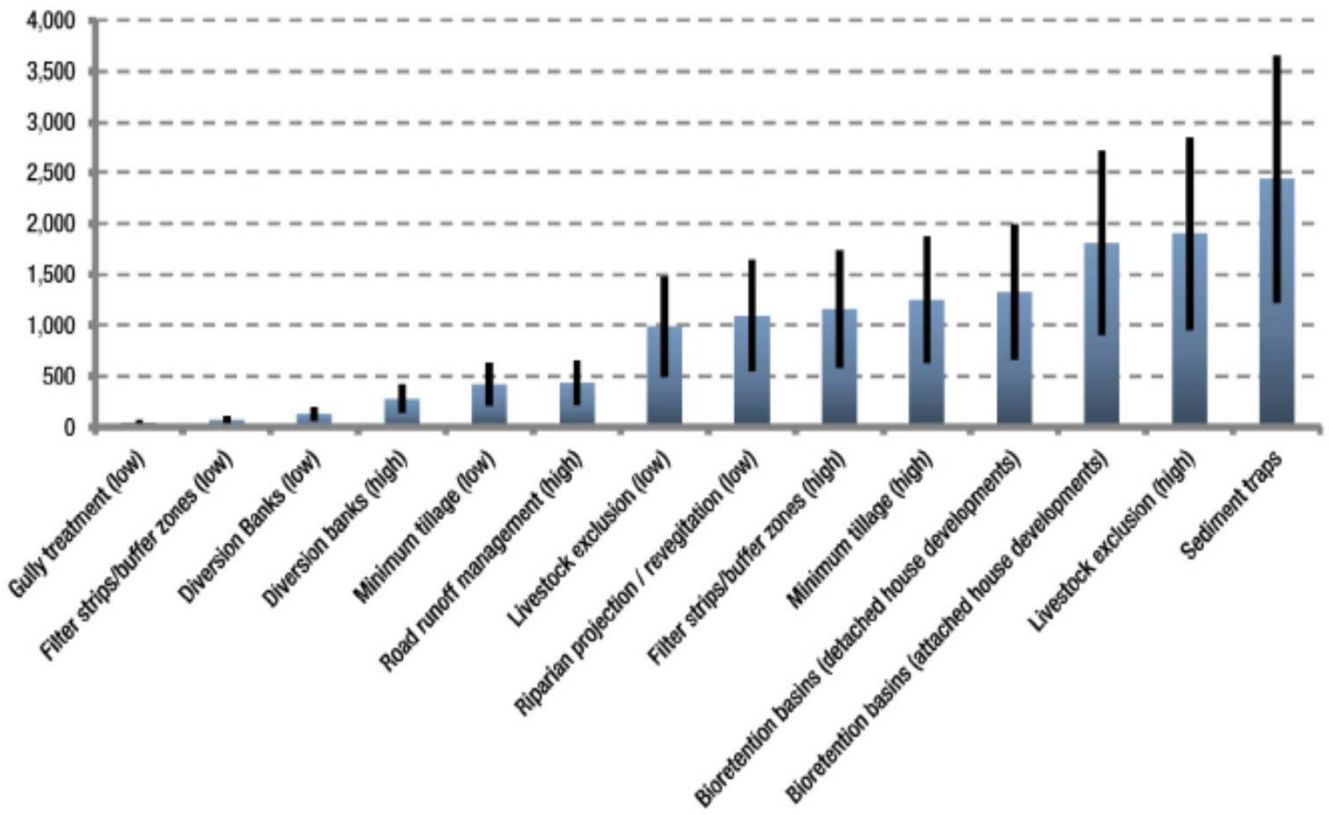


SEQ Catchments, QLD

Investment Strategies

TSS (tonnes p.a)

$/tonne/annum (average estimates & error bars to indicate uncertainty in existing estimates)



Source: MainStream analysis

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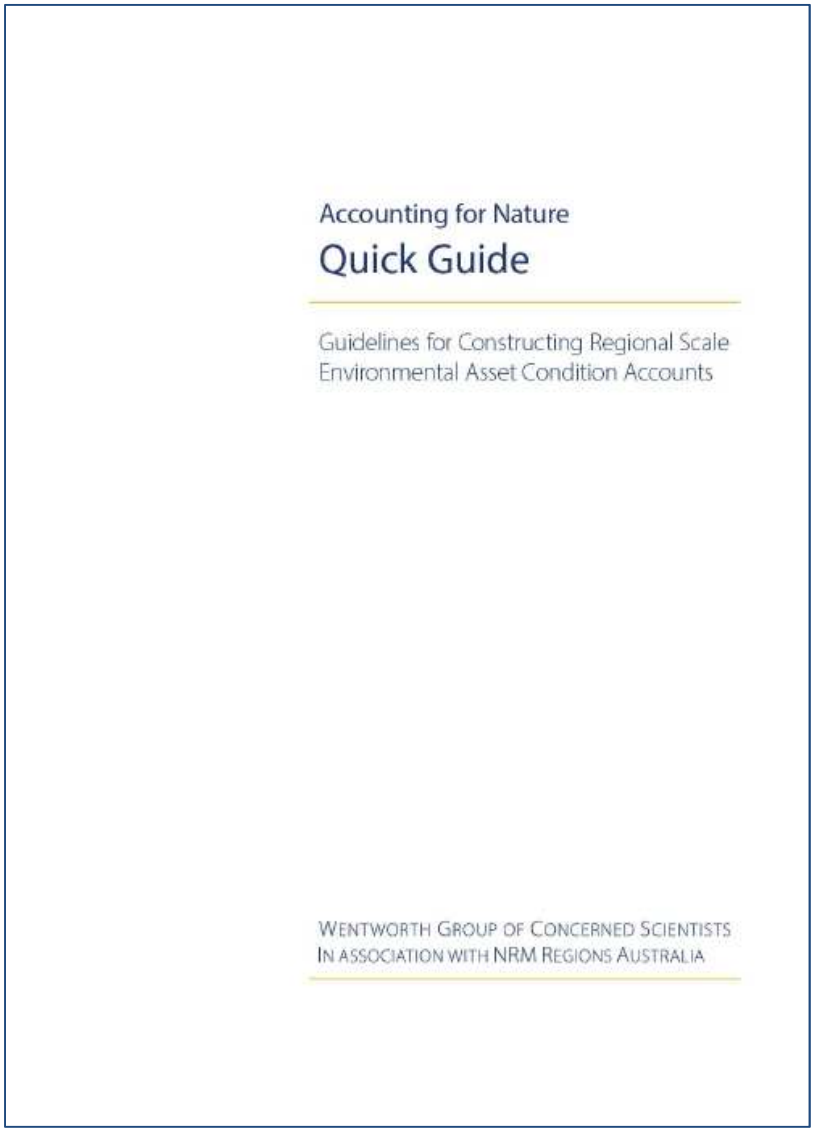


Key messages

Designed as a feasibility study to inform national approach

- Now have methodological approach (published *Quick Guide* 2013)
- Identified needs and gaps (institutional arrangements, resourcing, data)
- Identified practical solutions

Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

Lessons learned

FEASIBLE:

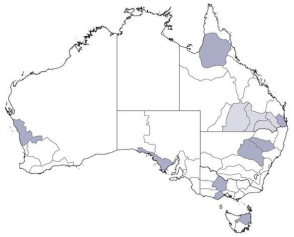
- Regions are right level -> but need some national coordination and resourcing

ROBUST:

- *Science* - the concepts of the Econd stack up; Future work in further developing set of best practice/standards
- *Environmental accounting* – Does it align?; Future work in integrating condition measures

PRACTICAL:

- Annual accounts possible and supported -> not annual data collection
- Processes (accreditation, multiscale accounts holders) ensure maximum application of framework



Australian Regional Proof of Concept Trials

Accounting for Nature

"Composite indicators should never be seen as a goal, per se, regardless of their quality. They should be seen, instead, as a starting point for initiating discussion and attracting public interest and concern."

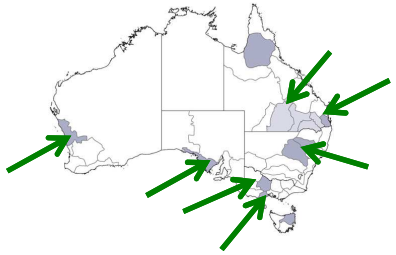
European Commission Joint Research Centre, 2002

FULL REPORT AVAILABLE EARLY 2015

Carla Sbrocchi

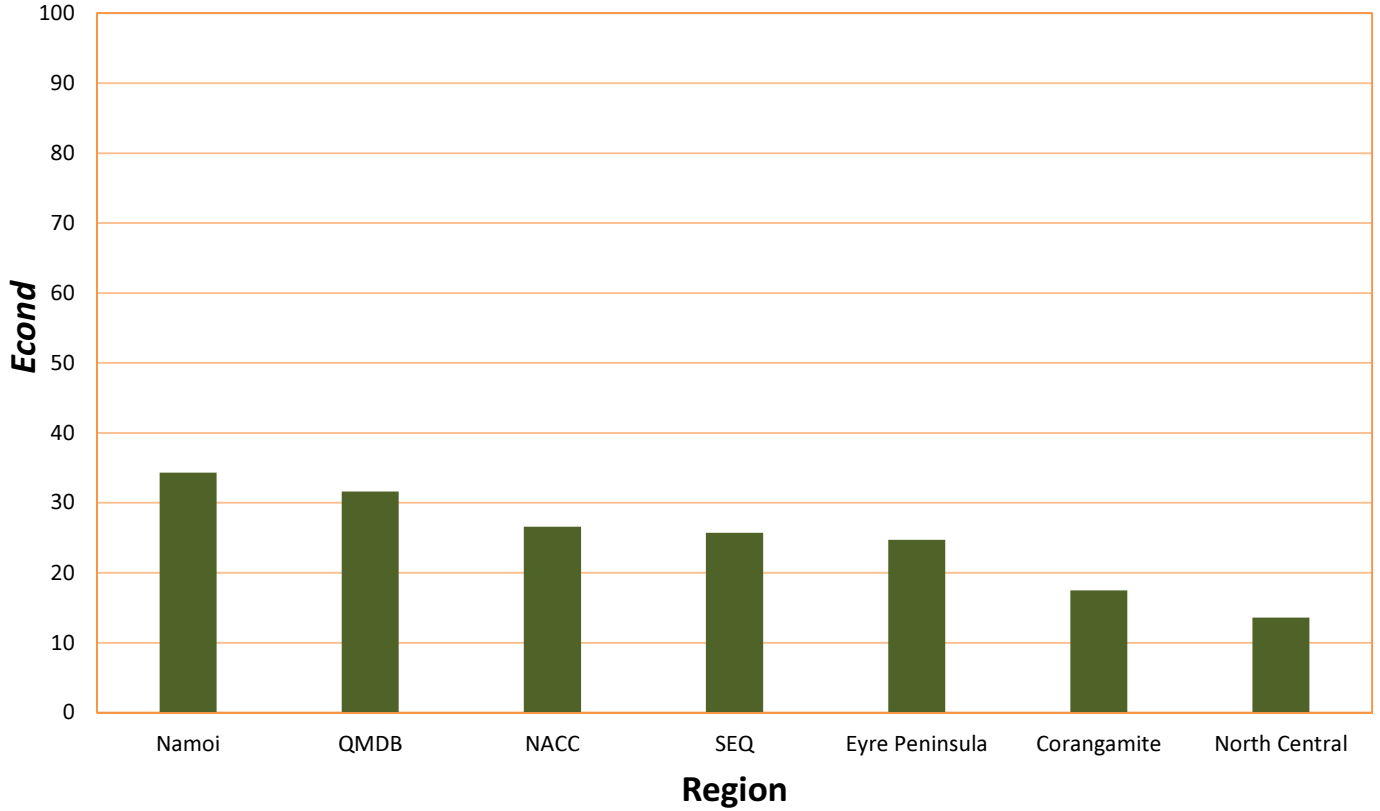
Wentworth Group of Concerned Scientists

WWW.WENTWORTHGROUP.ORG



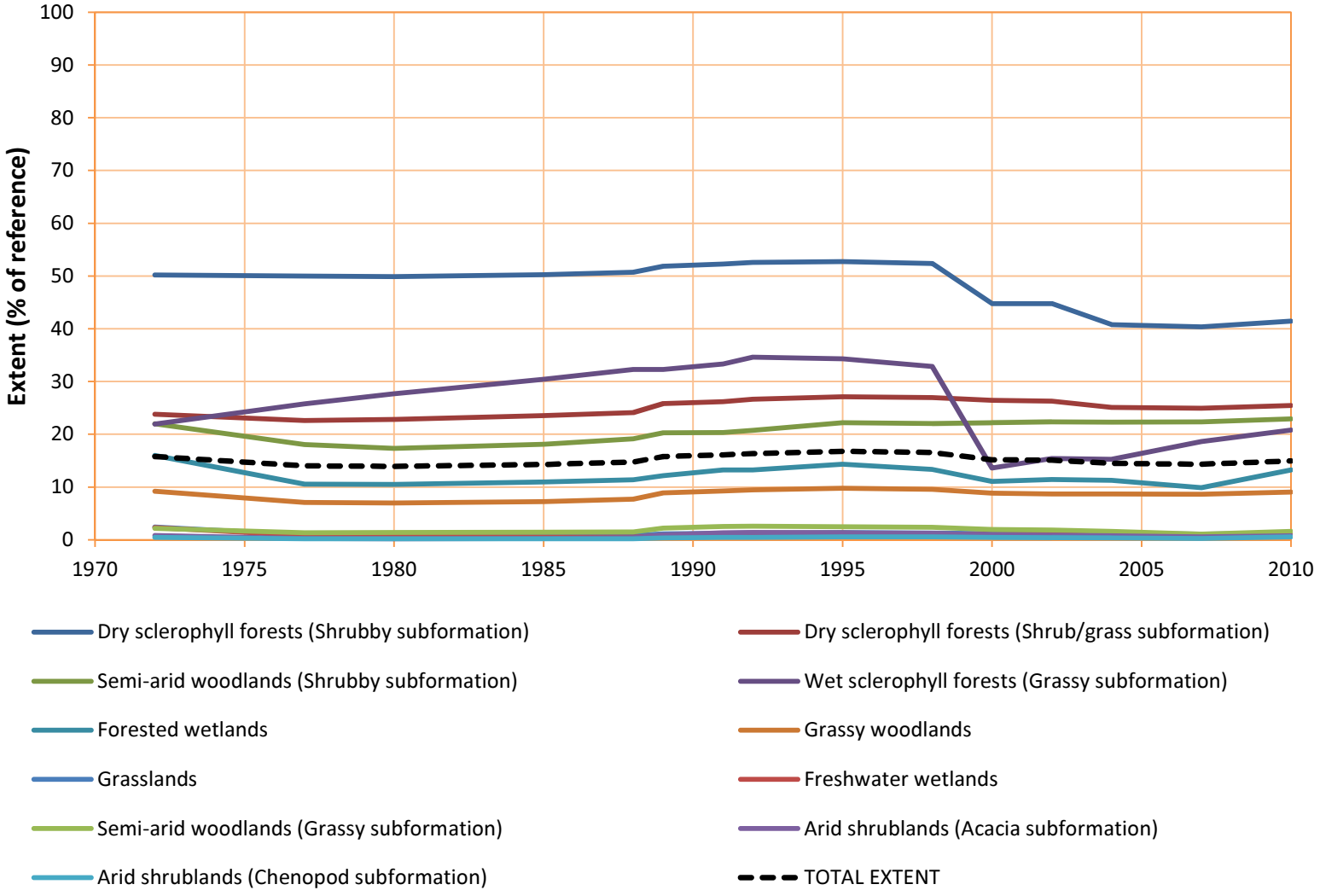
Condition of Native Vegetation

across 7 Trial Regions



Central West, NSW

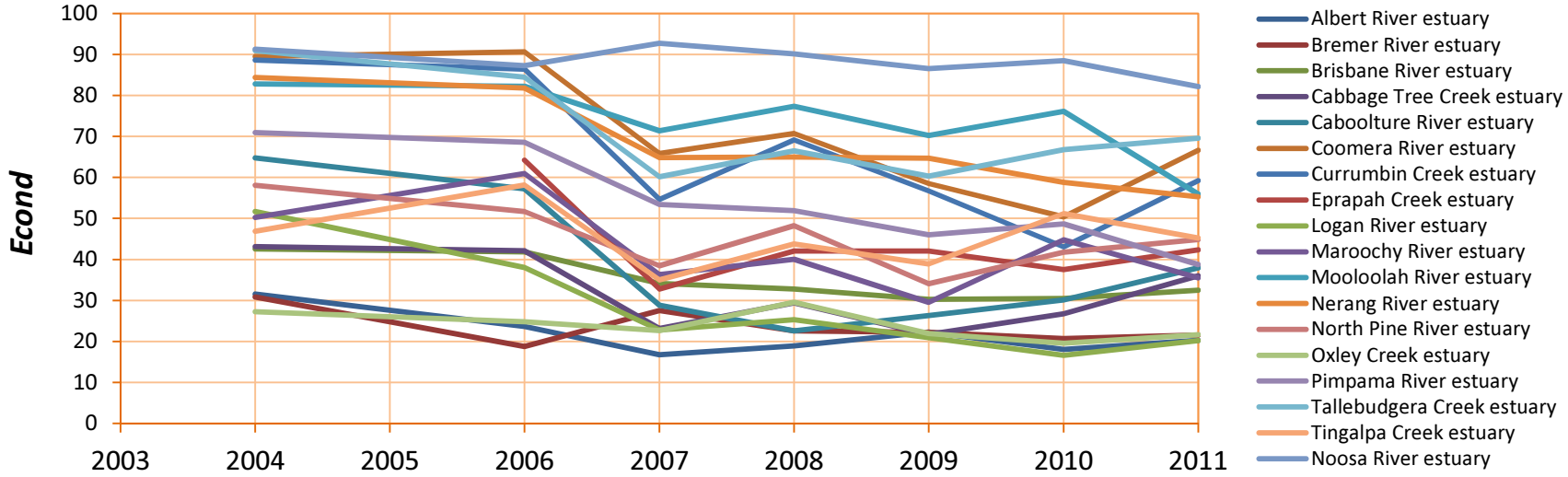
Trends in condition and management response



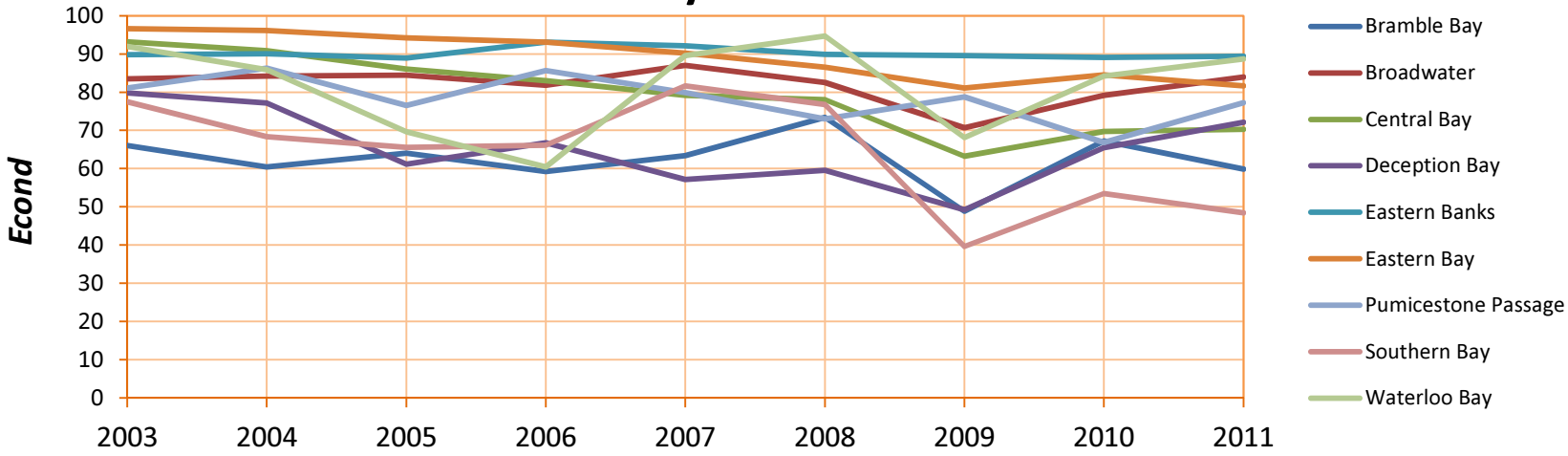
South East Queensland Catchments

Trend in Estuary Condition

All Estuaries



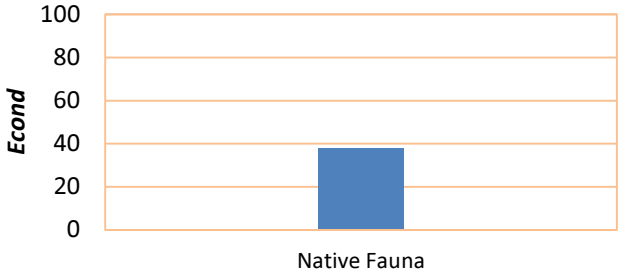
Moreton Bay Ramsar site



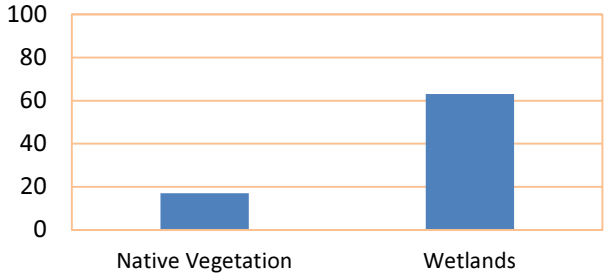
Condition of Environmental Assets

in each Region (***Econds***)

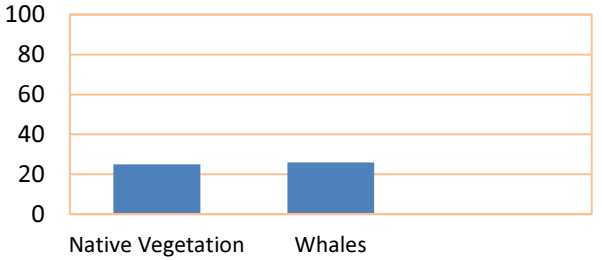
Central West CMA
New South Wales



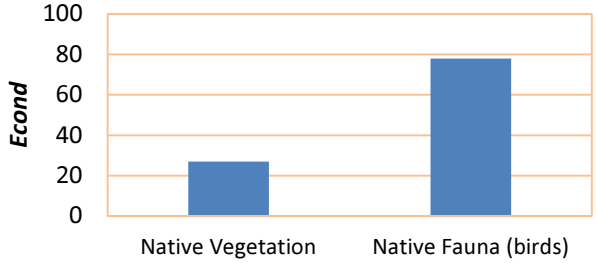
Corangamite CMA
Victoria



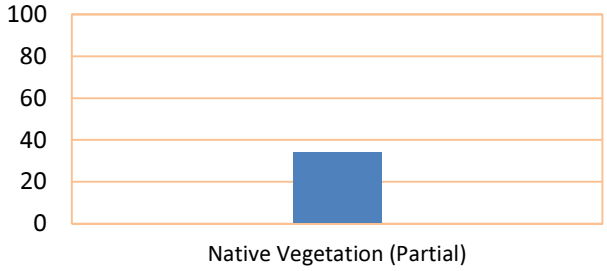
Eyre Peninsula NRM Board
South Australia



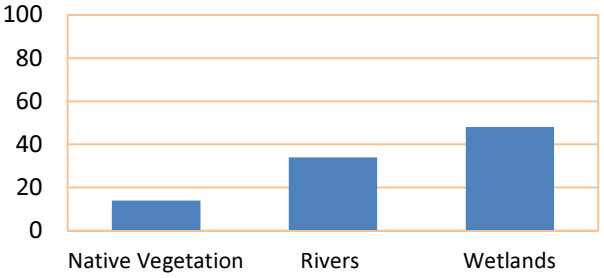
Northern Agricultural
Western Australia



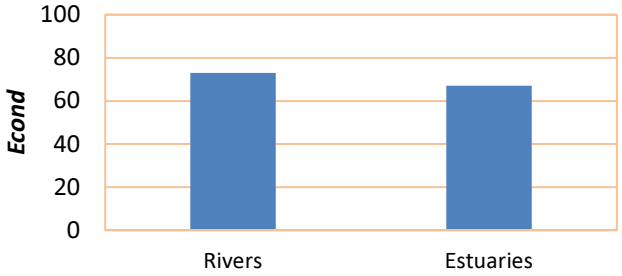
Namoi CMA
New South Wales



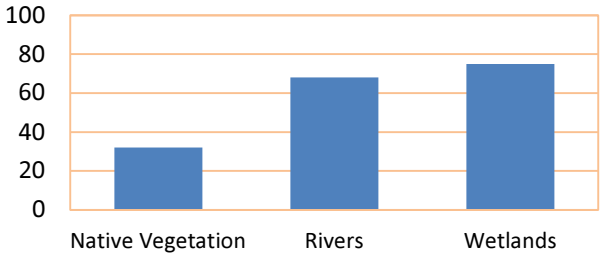
North Central CMA
Victoria



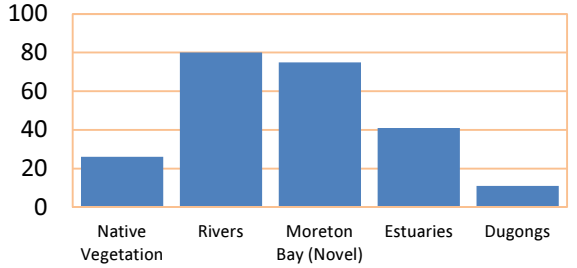
NRM North
Tasmania



Queensland Murray Darling
Queensland



SEQ Catchments
Queensland



River Indicators

SRA

Fish
- Expectedness
- Nativeness

Macro-invertebrates
- SIGNAL

Hydrology
- High-Flow Events
- Low- and Zero-Flow Events
- Variability
- Seasonality
- Gross Volume

SEQ - EHMP

Phys / Chem
Nutrient cycling
- DelN
- NPtoC

Biological
- AssayCtrl
- DelC
- R24
- GPP

Macro-I
- Ref - MacroRich
- Ref - PET
- Ref - SIGNAL

Fish
- Ref - PONSE
- Ref - FishOE
- Ref - PropAlien

Accounting for Nature

A Common Currency for Measuring the Condition of Environmental Assets

Accounting for Nature provides physical, ongoing measures of environmental impact on environmental assets for decision-making