

the unaccounted value of natural capital

RISKS AND OPPORTUNITIES

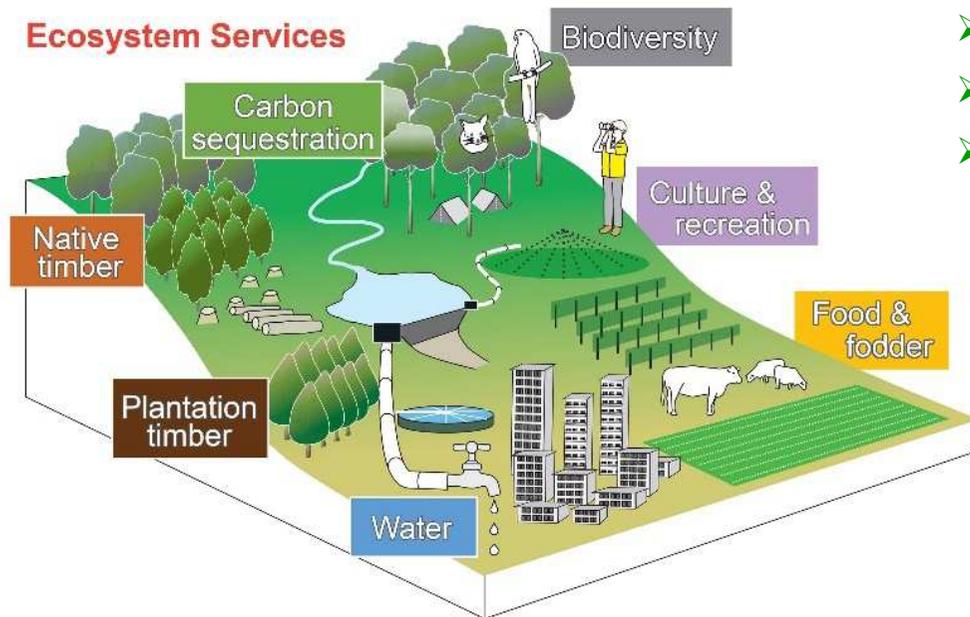
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Ecosystem accounting

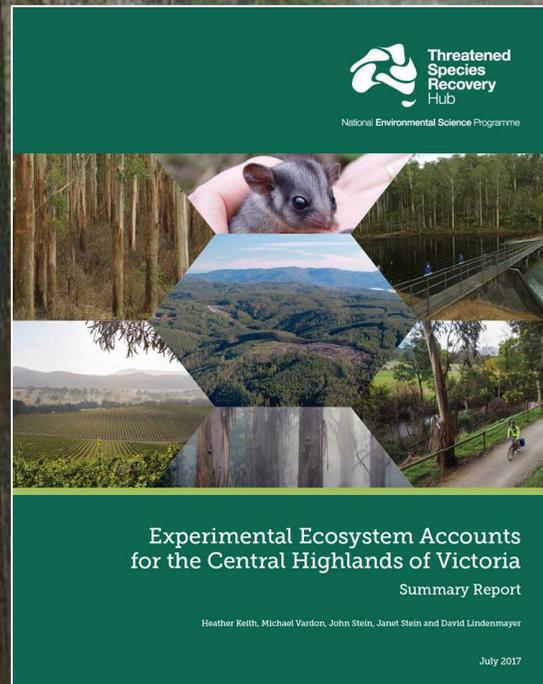
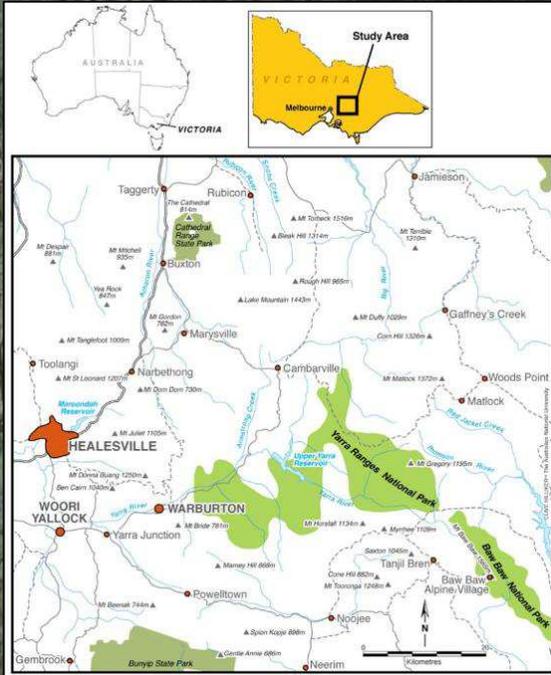
Provides the evidence base to inform decision-making:

- Integrates all assets and services in a region
- Translates environmental values into economic terms
- Allows comparisons within a common framework
- Evaluates trade-offs explicitly and spatially



Objective: To provide environmental information in a format relevant to informing decision-making about natural resource management in a region

Ecosystem accounting in the Central Highlands of Victoria



Data on ecosystem services and values for:

- water
- carbon*
- timber*
- tourism
- agriculture
- biodiversity*

*From LTER sites (1983-present)

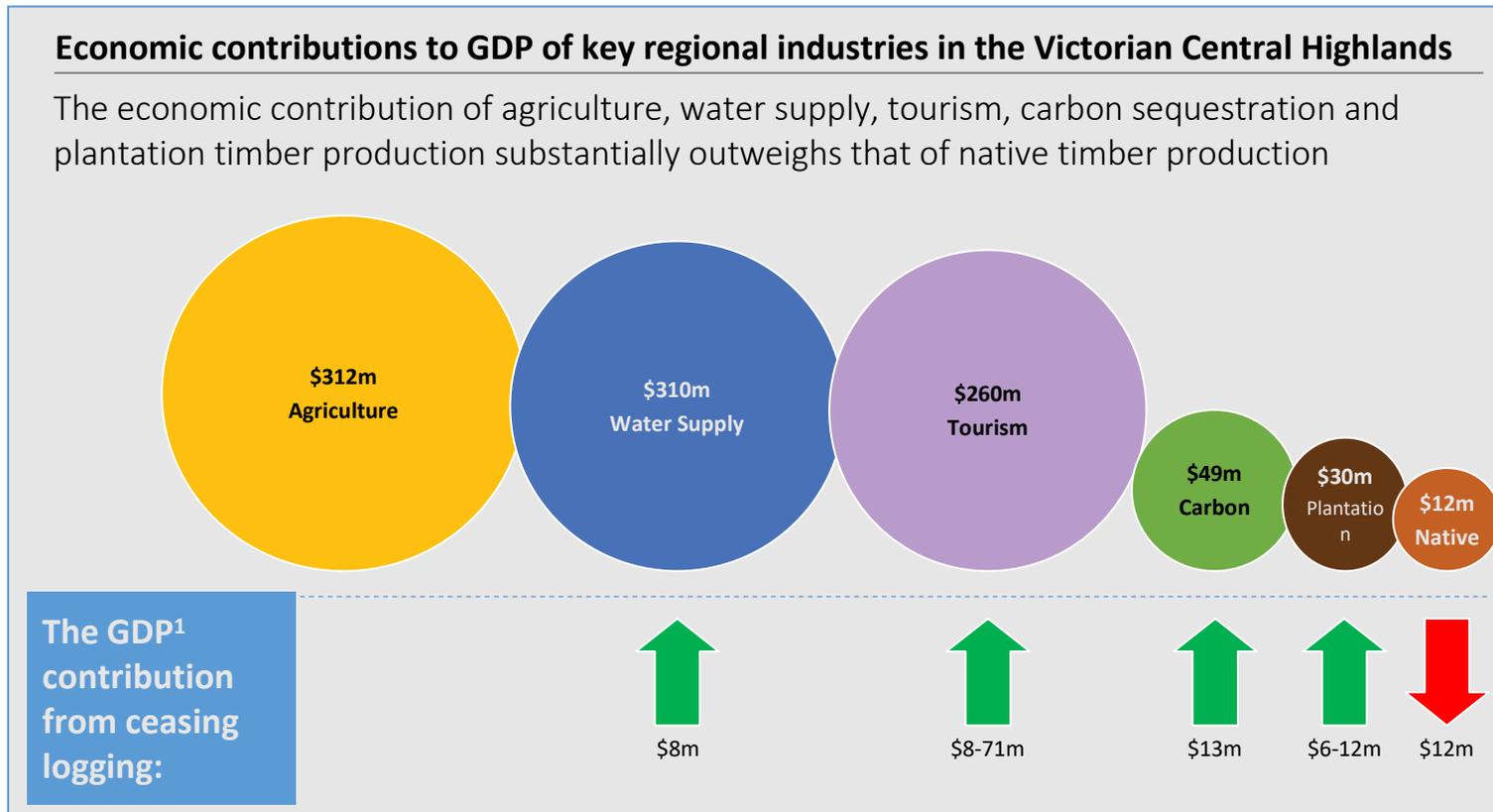
Experimental Ecosystem Accounts
for the Central Highlands of Victoria

Summary Report

Heather Keith, Michael Vardon, John Stein, Janet Stein and David Lindenmayer

July 2017

Economic benefits of ceasing logging outweigh the costs



¹GDP impact is calculated using the IVA - Industry Value Added, where the sum of all IVAs equals the GDP contribution

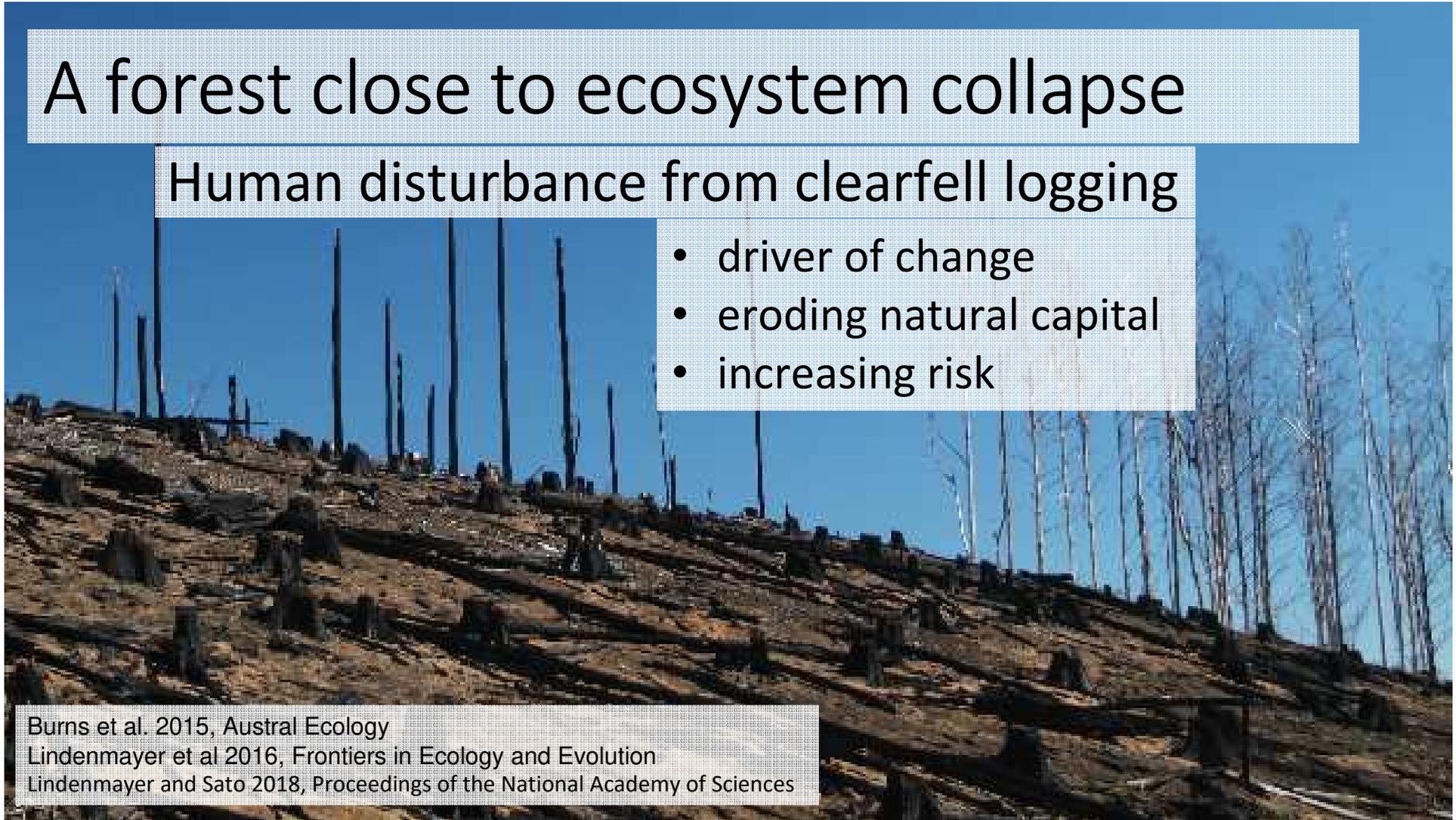
SOURCE: H Keith et al., Ecosystem accounts define explicit and spatial trade-offs for managing natural resources, Nature Ecology & Evolution, 2017

A forest close to ecosystem collapse

Human disturbance from clearfell logging

- driver of change
- eroding natural capital
- increasing risk

Burns et al. 2015, *Austral Ecology*
Lindenmayer et al 2016, *Frontiers in Ecology and Evolution*
Lindenmayer and Sato 2018, *Proceedings of the National Academy of Sciences*



A photograph of a lush green forest with a waterfall in the foreground. The waterfall is in the lower right, and the forest extends to the top and left. The text is overlaid on the image in white boxes with black text.

Beyond the accounts

...and beyond climate risk

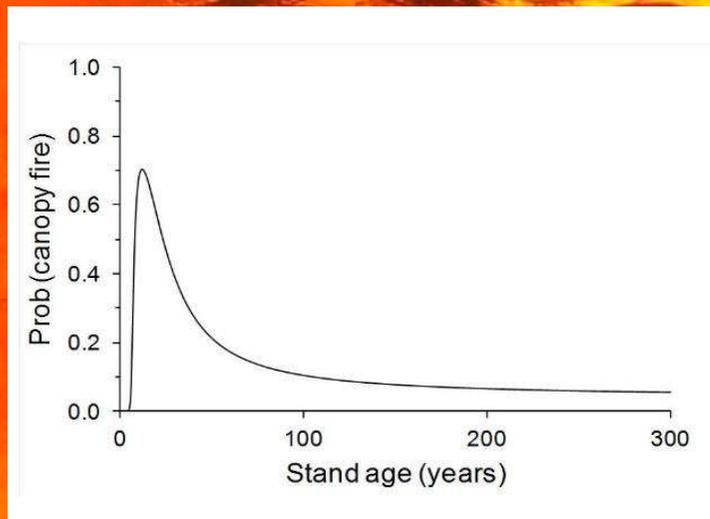
Water loss from a collapsed ecosystem

- Most of Melbourne's water
- 4.5m people – Australia's largest city by 2020

Beyond the accounts

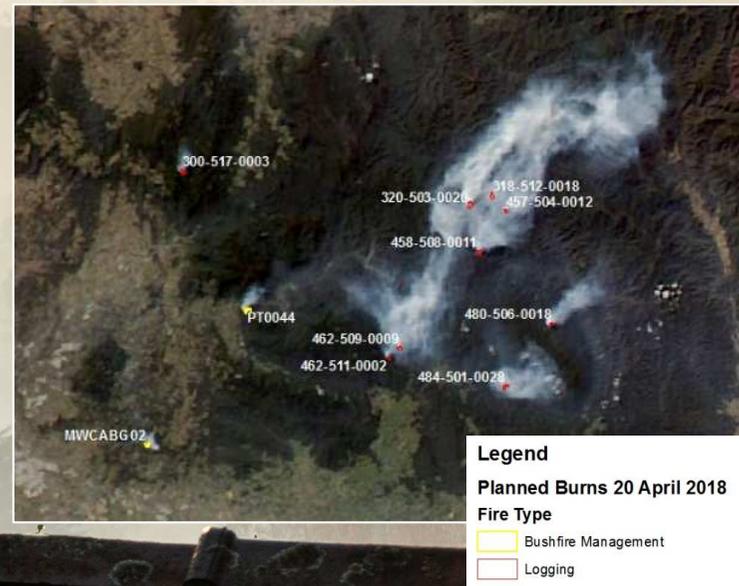
Logging makes forests more prone to high severity fire

Major risk to human populations in areas adjacent to logged forest



Beyond the accounts

Human health effects of smoke derived from burning 150-450 tonnes of logging slash per ha

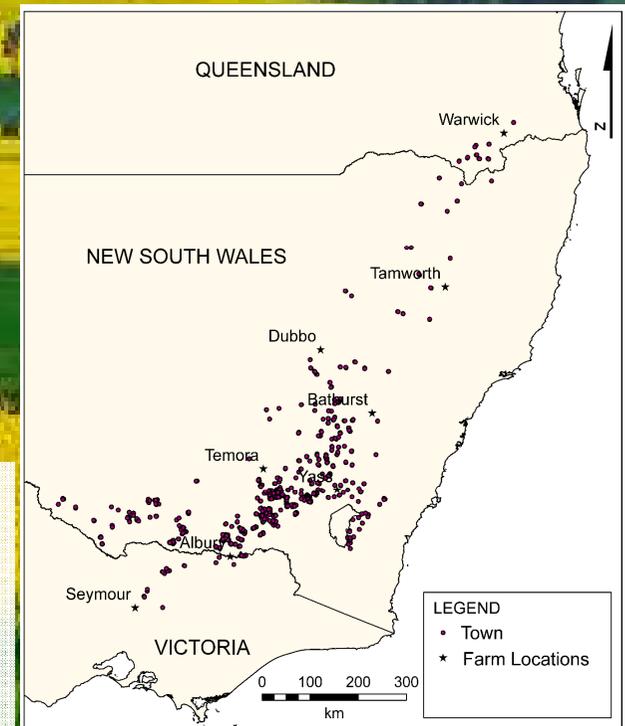


Key environmental assets overlooked

- Many declining small birds
- Farms with vegetation cover = more productive and (potentially) more profitable
- Also significant mental health benefits of farm restoration

The Sustainable Farms Initiative

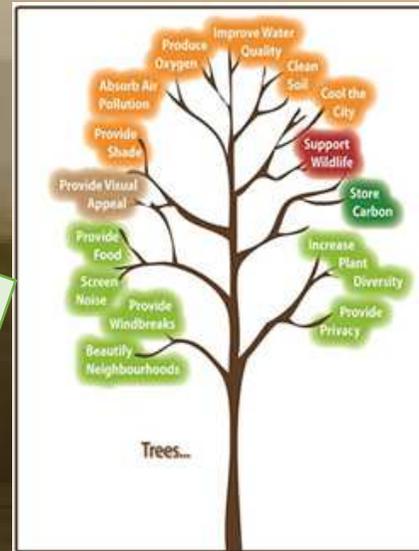
Healthy Farmers Healthy Farms Healthy Profits



Ecosystem accounting for the Box Gum Grassy Woodlands

Value?

Ecosystem services



- Carbon storage
- Carbon sequestration
- Maintaining nutrient cycling
- Soil protection, erosion control
- Maintaining soil fertility
- Water infiltration
- Maintaining groundwater
- Flood mitigation
- Control of pests and diseases
- Pollination
- Decomposition processes

Productivity



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Market price for wool, meat and grain

less costs of inputs:
fertilizer, pesticides, irrigation water, machinery, labour

Without natural capital accounting



National Environmental Science Programme

- No mechanism to properly value natural assets
- Perverse outcomes arise
 - logging vs water
 - vegetation and biodiversity are negative “assets” on farms
- Poor decisions are made: financially, ecologically and socially
 - farmer mental health
- Loss/collapse of integrated socio-ecological systems with knock-on effects
 - water/fire/smoke in Melbourne

With natural capital accounting



National Environmental Science Programme

- Integrated social, environmental and economic values across systems
- Understanding where environmental values underpin economic activity and social value
 - Incentives to invest in environmental value
- Opportunities for new growth industries