

# ABSTRACT AND PRESENTATION



## Dr Phil Gibbons

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Australian National University

**Day 1, 2.35pm**

**Area of work:** Applied ecology.

**Area of speciality:** Decision support systems for natural resource management; rapid biodiversity assessment; environmental monitoring.

### Take-home messages:

- Public investment in native vegetation conservation should focus on where greatest improvement – relative to the status quo – is likely.
- We should adapt our priorities in native vegetation conservation to a greater emphasis on cost-effectiveness, changes in the duty of care by private landholders towards native vegetation brought about by new legislation and current science.
- Greatest gains in native vegetation conservation are now likely to be made by investing in small patches of poor quality native vegetation in fragmented landscapes.

## Is poor quality the new high priority for biodiversity conservation? Adapting our priorities to changes in politics, legislation and science

Many NRM metrics identify the highest quality native vegetation remnants as priorities for investment. If our objective is to purchase improvement in biodiversity—relative to what would occur if we weren't to invest—then we argue that our priorities should generally shift to poorer quality native vegetation within small patches and fragmented landscapes. Heresy you say? I draw from my experience developing a metric for the Australian Government's Environmental Stewardship Programme to outline three arguments in support of this position:

1. *Politics.* It seems inconsistent that on the one hand governments have embraced market-like principles (e.g. competition) to make public money go further in NRM, but are not necessarily developing metrics that identify where we get greatest bang for this buck.
2. *Legislation.* Stronger native vegetation laws in some states have increased the duty-of-care by private landholders towards intact native vegetation. We should not undermine this progress by using public money to pay for native vegetation management below this duty-of-care.
3. *Science.* Research indicates that small patches and scattered trees make a significant contribution to biodiversity conservation and that small remnants on private land are on a steep trajectory of decline relative to large remnants on private land or native vegetation on public land tenures.

### Relevant publications

- Gibbons P, Briggs SV, Ayers DA, Seddon JA, Doyle SJ, Cosier P, McElhinny C, Pelly V, Roberts K, (2009). An operational method to assess impacts of land clearing on terrestrial biodiversity. *Ecological Indicators*, 9: 26-40.
- Gibbons P, Lindenmayer D, Fischer J, Manning A, Weinberg A, Seddon J, Ryan P, Barrett G, (2008). The future of scattered trees in agricultural landscapes. *Conservation Biology*, 22: 1309-1319.
- Gibbons P and Ryan P (2008) *A conservation value index for box gum grassy woodland.* A report to the Department of the Environment, Water, Heritage and the Arts. The Fenner School of Environment and Society, unpublished.



# Is poor quality the new high priority? For investments in conservation gain

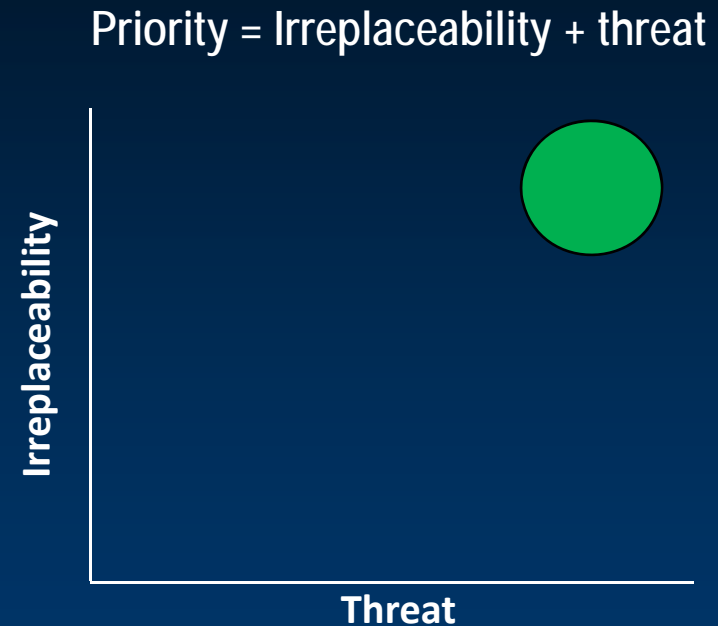
Phil Gibbons

The Fenner School of Environment and Society

The Australian National University

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“The question is not which refuge system contains more total species, but which contains more species that would be doomed to extinction in the absence of refuges.”  
Diamond (1976)



Source: Pressey and Bottrill (2008)


Microsoft Excel - BGGW\_CVI\_v1.7.10.xls

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1

2 **Conservation Value Measure**

3 **For Box Gum Grassy Woodland in NSW/ACT**

4

5 **Version 1.7.9**

6 **June 2008**

7

8

9 **Purpose**

10 This tool is designed specifically to underpin investment decisions for Box Gum Grassy Woodland under the Australian Government's

11 Environmental Stewardship Program.

12

13 **Instructions**

14 1. Refer to User Manual and supporting documentation before commencing

15 2. If you did not choose the 'Enable Macros' option when opening this spreadsheet then re-open choosing this option.

16 3. Data must be entered in white cells only - data in shaded cells are generated automatically.

17 4. Clicking on "Start" prompts the operator to save a version of the file, if required, before clearing all data from the workbook.

18

19

20 **Acknowledgements**

21 This tool is a modified version of the Biodiversity Incentive Tool (BIT) developed by the Department of Environment and Climate

22 Change (NSW).

23

24 **Further information**

25 <http://www.nrm.gov.au/stewardship/index.html>

26

Start >>

Intro / 1. Filter / 5. Incentives / 6. Summary / Data entry-Incentives / Formation definitions / BRG / CW / HN / HCR / L / LMD / MY

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# Other things being equal

1. In which stands of vegetation would you prioritise investment?
2. In which patches?
3. In which configuration?
4. In which landscapes?

# 1. In which stand of vegetation would you prioritise investment ?



**High  
quality**

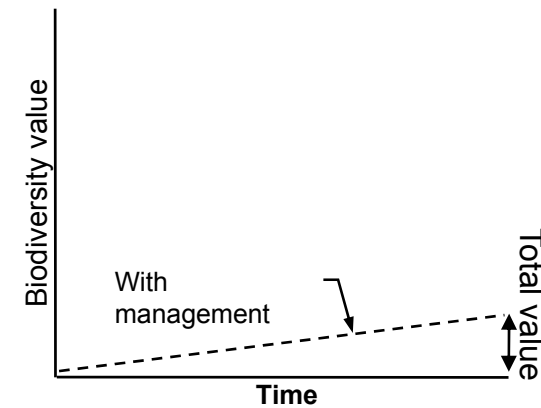
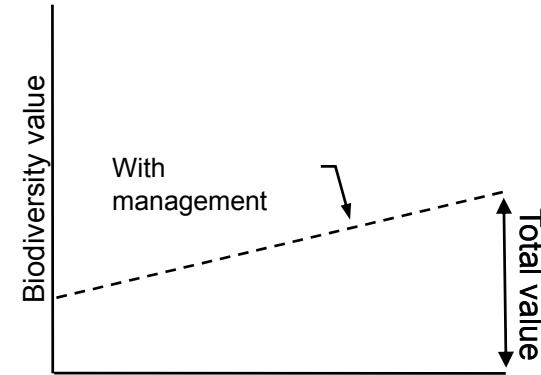
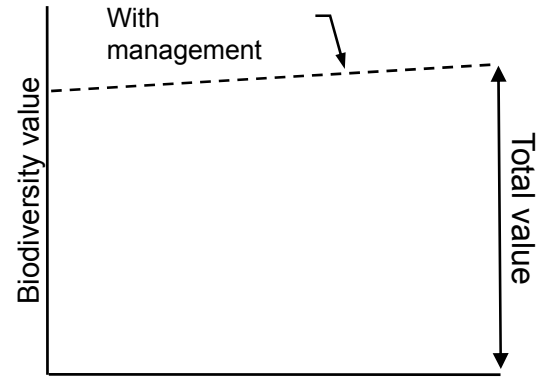


**Moderate  
quality**

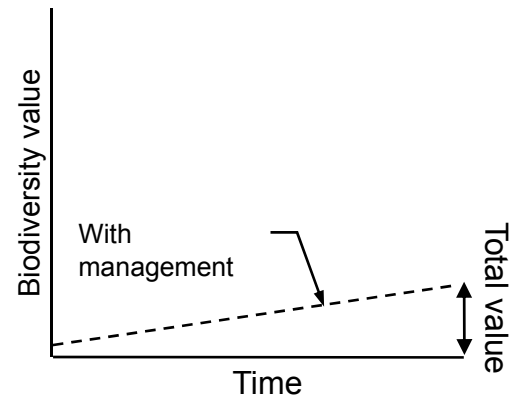
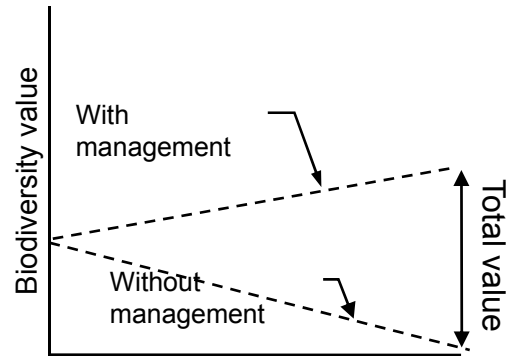
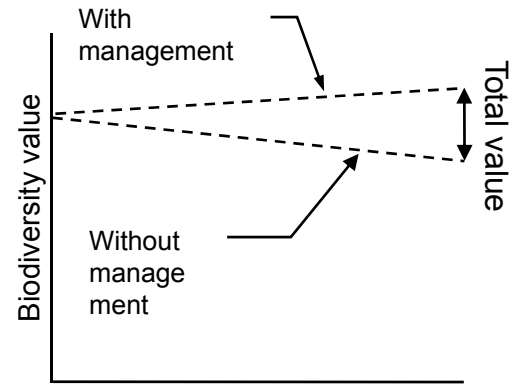


**Cleared**

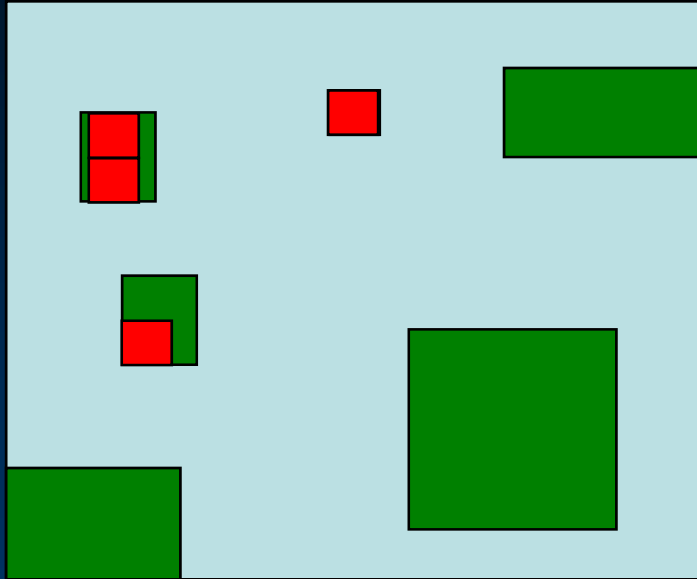
# Prioritising investment based on condition



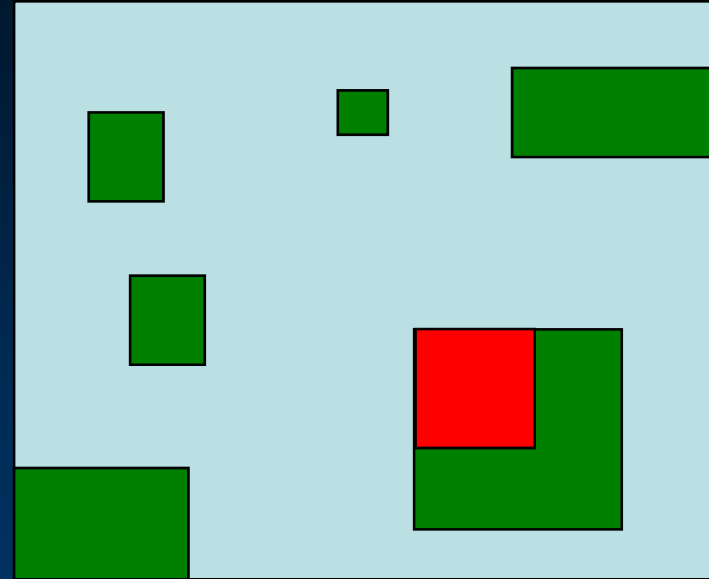
# Prioritising investment based on improvement



## 2. In which patches would you prioritise investment?



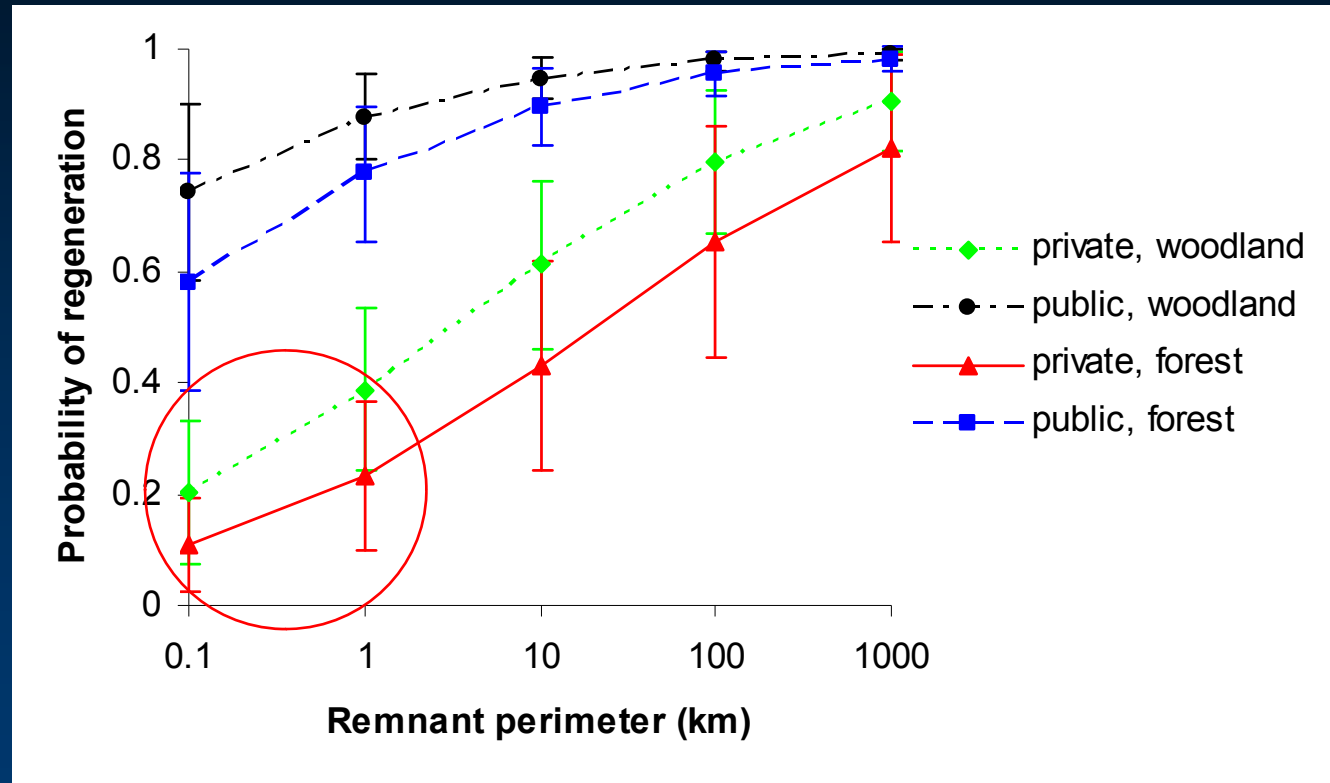
**Invest across  
several smaller  
patches**



**Invest within few  
largest patches**

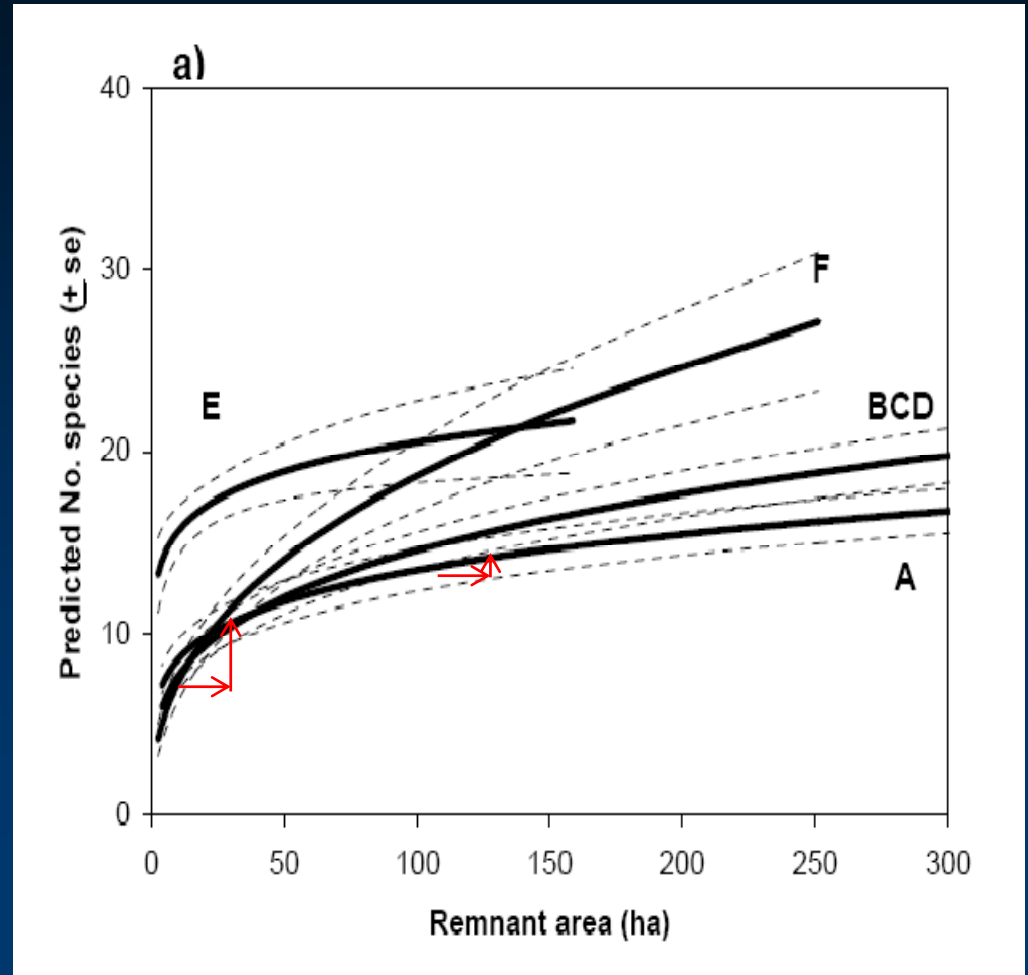
# Why small patches can be the best investment

- threat

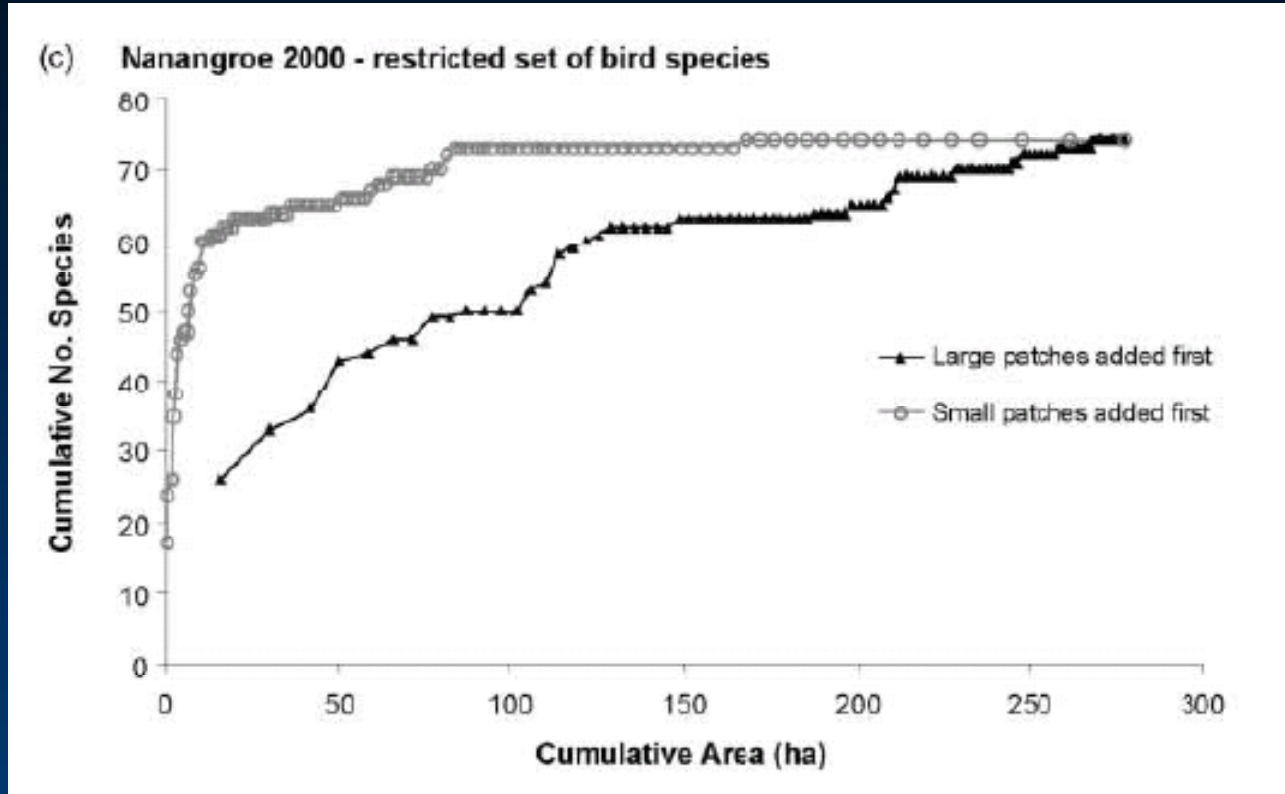


Source: Weinberg (2005)

- change per unit of effort

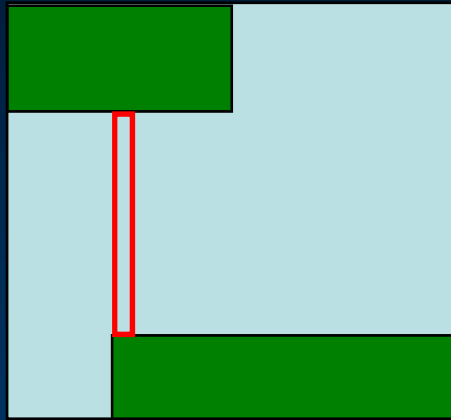


Bird species richness with patch size (Seddon et al. 2003)

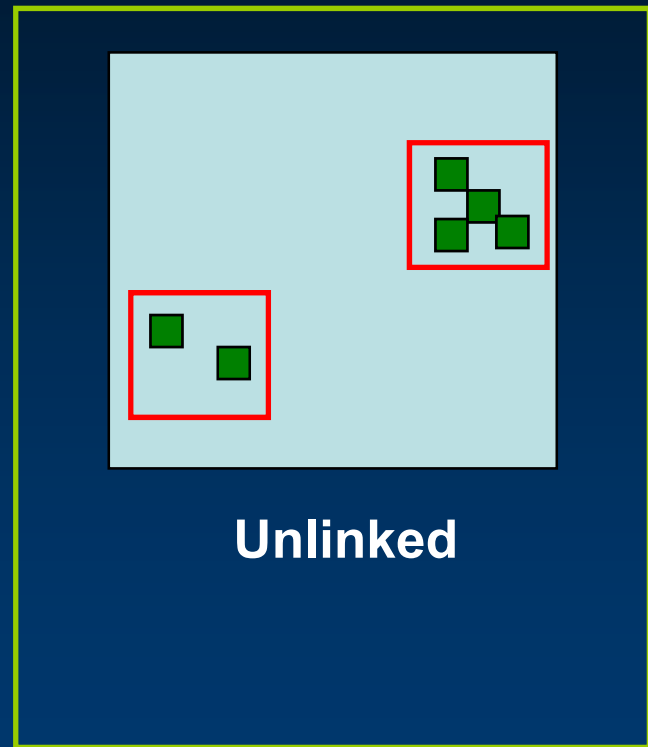


Bird species accumulation in small vs large patches (Fischer & Lindenmayer 2002)

### 3. In which configuration would you prioritise investment?



**Corridor**



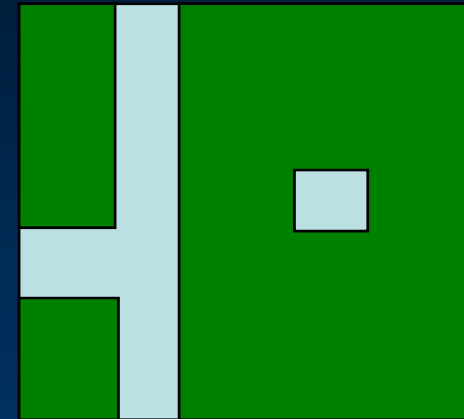
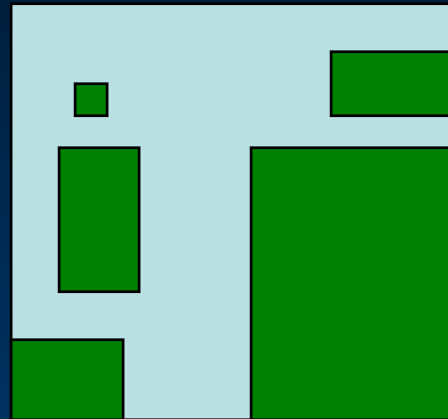
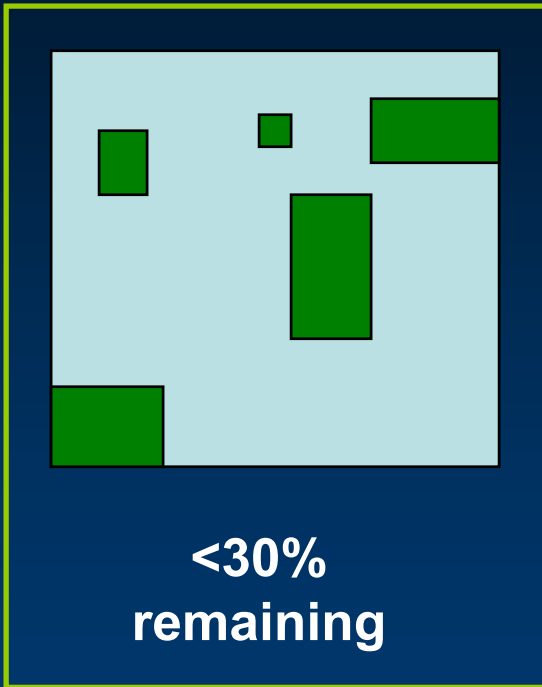
**Unlinked**

# Why unlinked habitat can be the best investment

“Evidence is mounting for a primary effect of composition (what and how much) and secondary effect of configuration (how it is spatially arranged).”

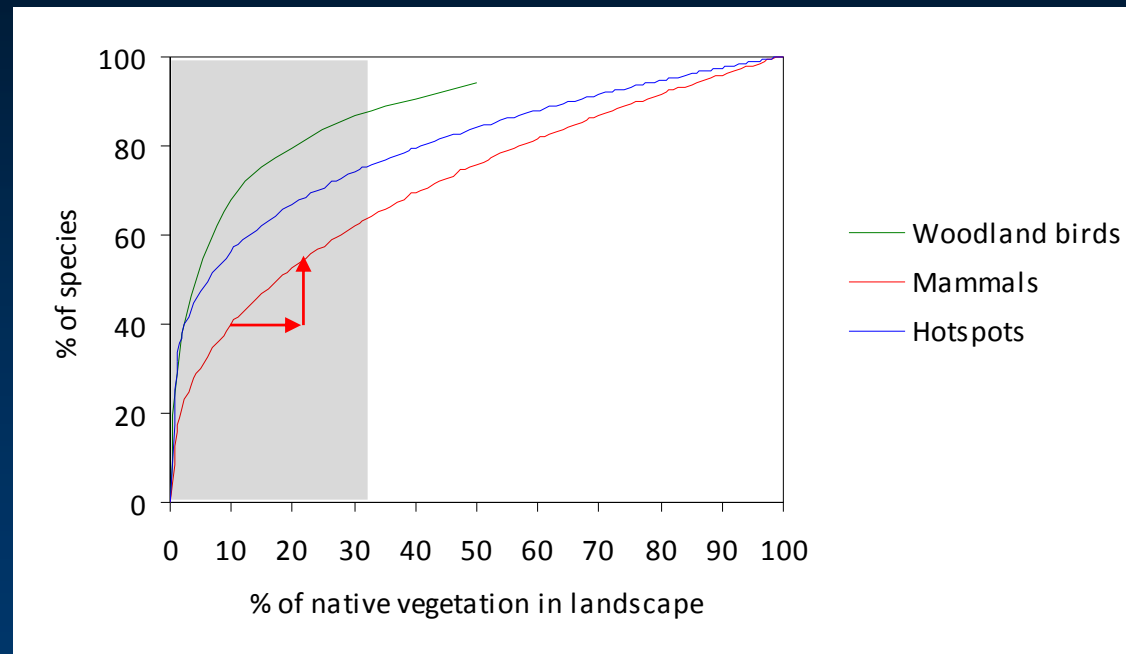
Turner, M.G. (2005). Landscape ecology: What is the state of the science? *Annu. Rev. Ecol. Evol. Syst.* 36:319–442.

# 4. In which landscapes would you prioritise investment?

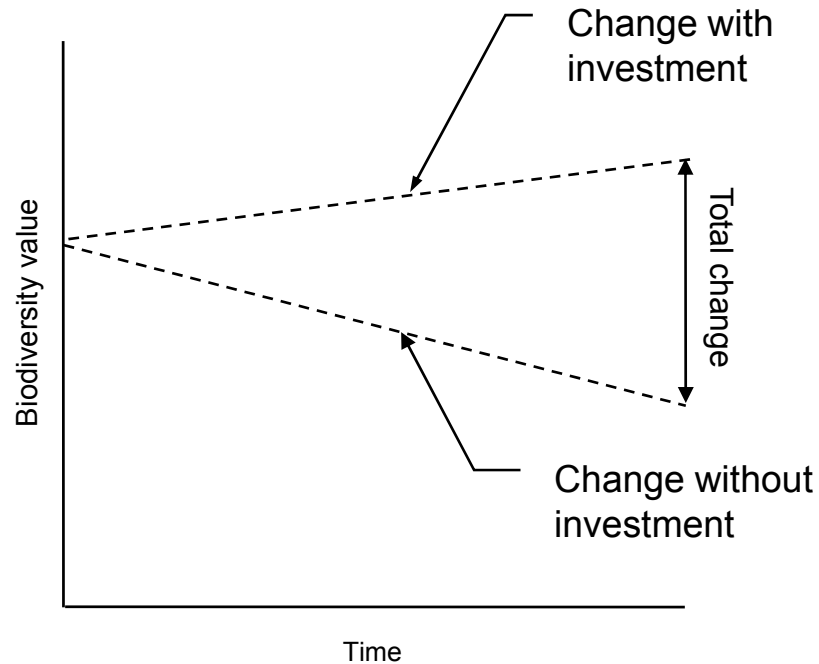


# Why fragmented landscapes can be the best investment

- Threat
- Biodiversity gain per unit of effort



# In summary: Investment priorities in native vegetation should be based on



- feasible restoration goals
- responses of biota
  
- duty of care (legislation)
- threats