

Keeping the Auditor-General happy: Demonstrating return on Caring for Our Country

After two less-than-glowing reports on the accountability of Australia's natural resource management investments, the Audit Office will expect to see a clear statement on the return on current *Caring for our Country* investments. Substantial challenges remain in:

- identifying and attributing benefits arising from investments
- developing a framework for monitoring
- learning lessons about the cost-effectiveness of these frameworks.

Adaptive management provides a coherent framework for monitoring, learning and improvement. However, developing a coherent adaptive management strategy is not trivial and few practical examples of true adaptive management exist. Two key components of adaptive management that are commonly overlooked are the setting of clear and measurable management objectives and the role of cause-and-effect models in both action prioritisation and monitoring design.

I will discuss some of the key challenges facing the Australian government in designing investment, reporting and improvement strategies under *Caring for our Country*. I will discuss some cause-and-effect modelling and cost-utility analysis methods that may help in addressing these challenges.

Relevant publications

Duncan D and Wintle BA (2008) Towards adaptive management of native vegetation in regional landscapes. In *Landscape Analysis and Visualisation. Spatial Models for Natural Resource Management and Planning*. (Eds C Pettit, I Bishop, W Cartwright, D Duncan, K Lowell and D Pullar). Springer – Verlag GmbH, Berlin.

Wintle BA and Lindenmayer DB (2008) Adaptive risk management for certifiably sustainable forest management. *Forest Ecology and Management* 256:1311-1319.

Cain J (2001) *Planning improvements in natural resources management: Guidelines for using Bayesian networks to support the planning and management of development programmes in the water sector and beyond*. Centre for Ecology & Hydrology, Crowmarsh Gifford, Wallingford, UK.



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Day 1, 2.20pm

Area of work: Ecology and conservation management.

Area of speciality: Modelling, monitoring, uncertainty analysis, decision-making and furry animals.

Take-home messages:

- Conceptual cause-and-effect models provide the backbone for coherent investment prioritisation, learning and improvement.
- Conceptual models need not be prohibitively complex. Influence diagrams and Bayes Nets provide a relatively simple way to represent a cause-and-effect relationships that can be updated with monitoring data or new information as it arises.
- Adaptive management is a coherent approach for learning and achieving long-term improvements in the cost-efficiency of natural resource management, but it's not simple to design and implement. Documented working examples of adaptive management are sorely needed.



Demonstrating return on investment in Caring for our Country

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NRM in Australia - recent history

www.ecdc.gov.au

- NLP – \$360mill
- NHT1 – \$1.3bill
- NHT2 – \$1.2bill
- NAP – \$1.6bill (total to date ~ \$4bill)
- Caring for our country - \$2.25 billion over 5yr
 - existing NRM groups: \$135mill in 09/10
 - priority areas: NRS, Biodiversity, Coastal, Sustainable Farms, Community skills, Northern Aust (incl. election promises)



Australian National Audit Office (ANAO)

www.anao.gov.au

What they were saying in 1997

It is difficult to determine the extent to which programs are achieving their intended outcomes.

Performance information is not adequate for program managers in DPIE or Environment Australia to determine the quality or the nature of outcomes being achieved.

Monitoring, review and performance reporting has not been adequate to manage potential risks.

What they said in 2008

Overall, the ANAO considers the information reported in the DAFF and NHT Annual Reports has been insufficient to make an informed judgement as to the progress of the programs towards ... outcomes

There is little evidence ... that the programs are ... achieving the anticipated national outcomes

Priority should be given to improving the Joint Team's ability to monitor, evaluate and report reliably..

(Thanks to Stefan Hajkovicz for paraphrasing)

The NHT/NAP problem - summary

- Failed to clearly define [measurable] objectives
- No Model: Outcomes \leftarrow Investment options
- Opaque allocation/prioritization strategies
- Value for money? [No performance measures to monitor]
- No plan for learning (continuous improvement)

These problems exist at regional and national levels

Getting it right in Caring for our Country

www.ecdc.gov.au

What we need:

1. A defensible strategy for prioritizing investments
2. A strategy for measuring and reporting on their performance
3. A plan for learning and continuous improvement

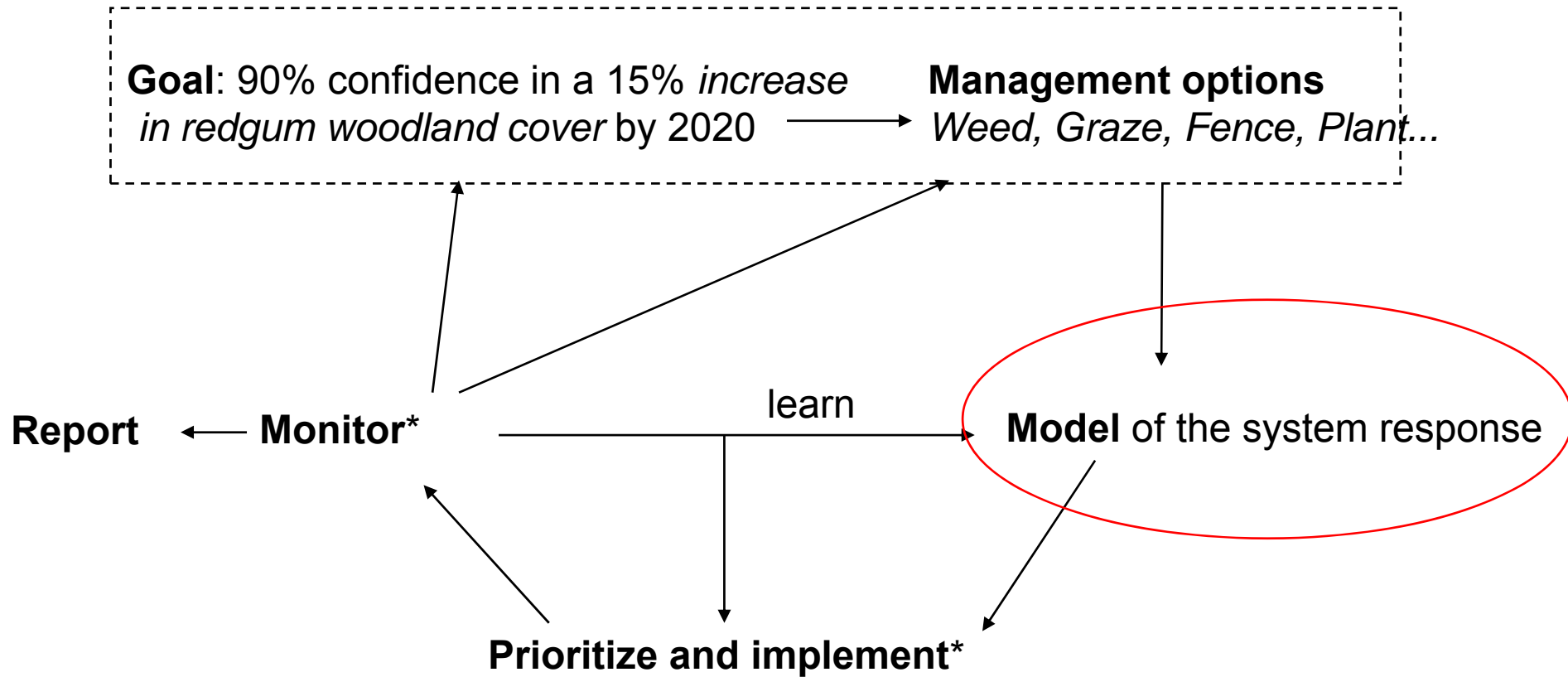
... appear to be quite well articulated under the Australian Land & Coasts MERI strategy

BUT what does that look like in practice?



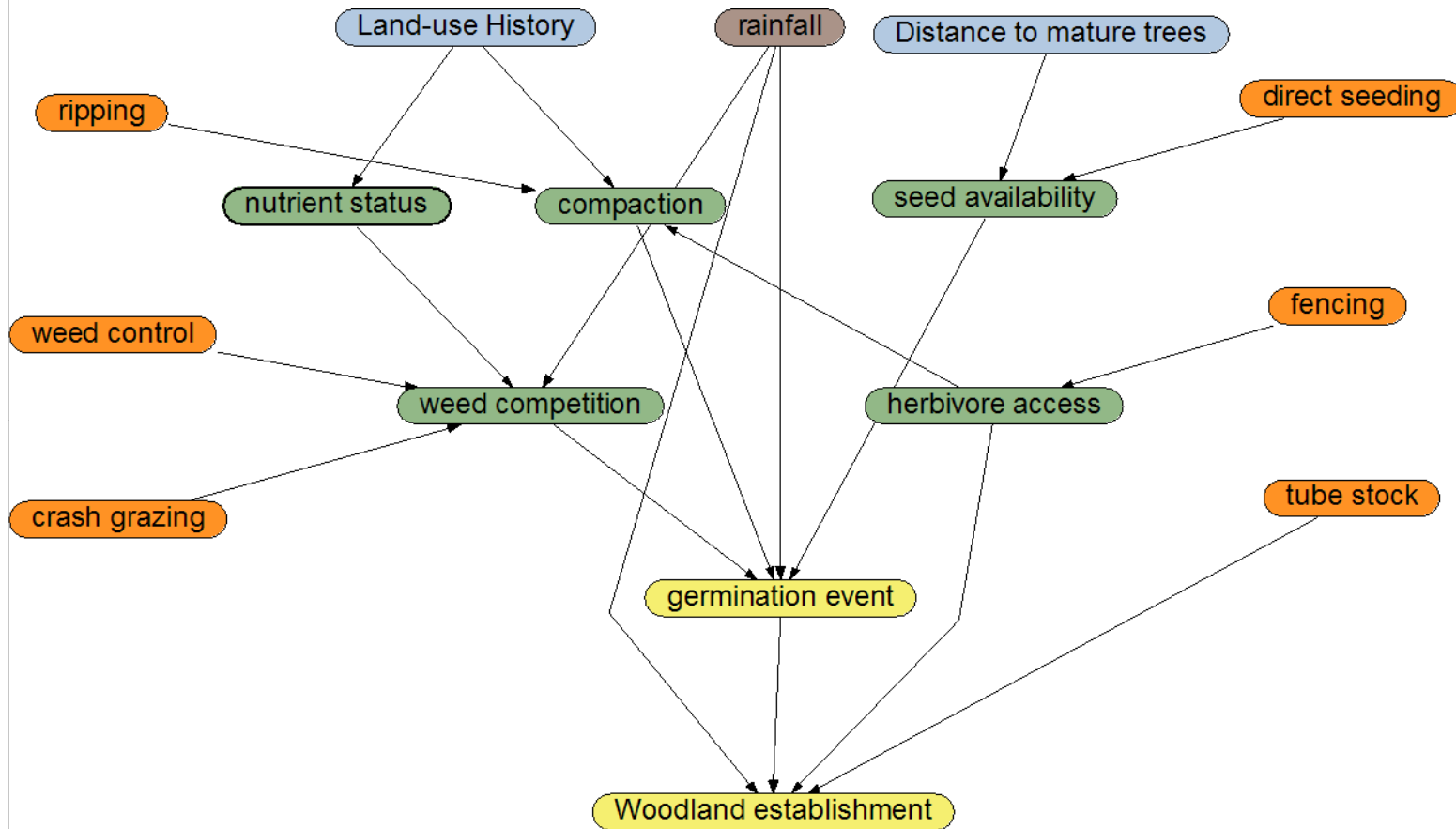
photo: David Salt

Towards a solution - Regional

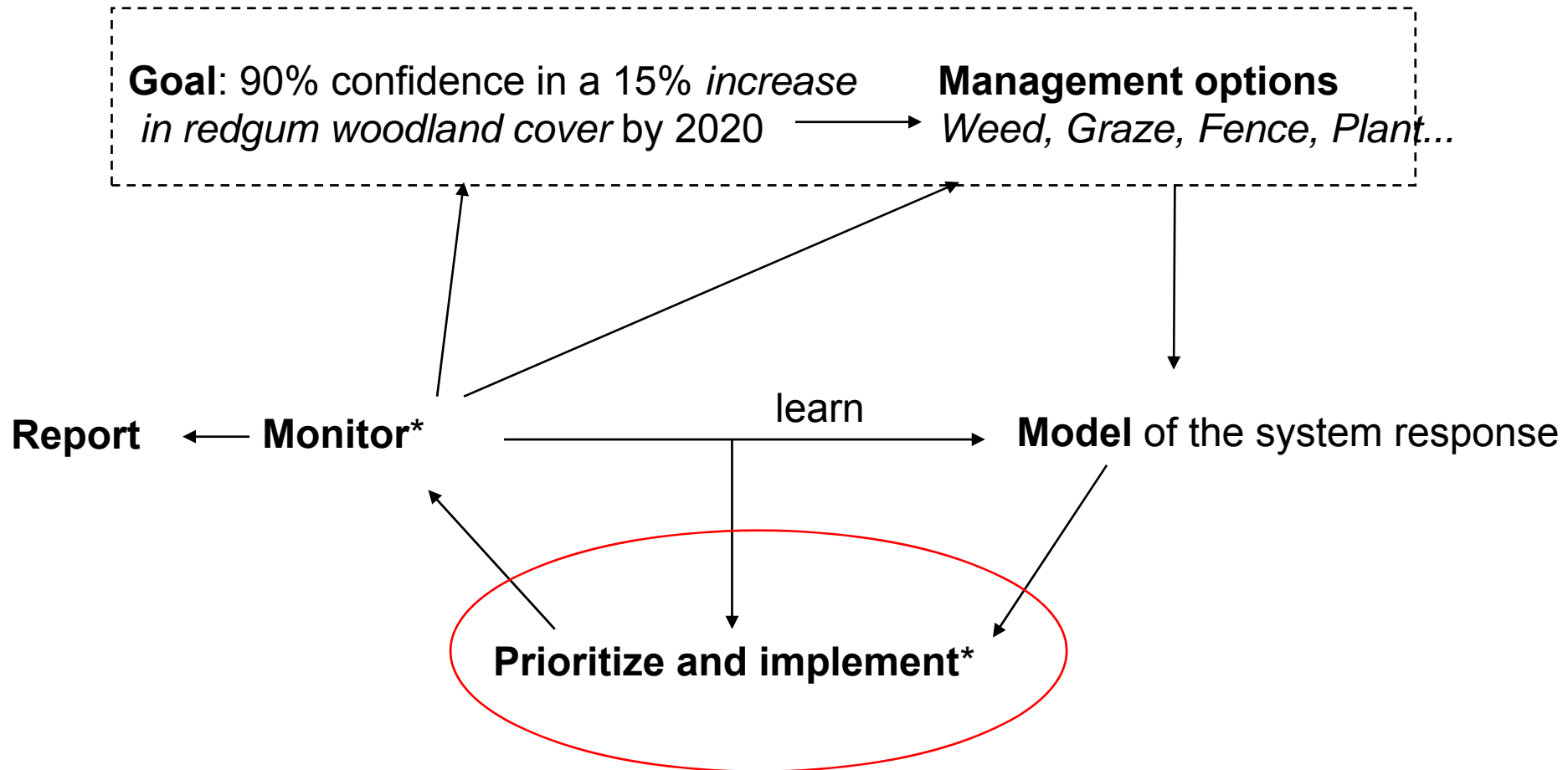


FROM: Duncan, D., and B. A. Wintle. 2008. Towards adaptive management of native vegetation in regional landscapes. *in* C. Pettit, et al., eds. Landscape Analysis and Visualisation. Springer.

Model of system: actions -> outcomes



Towards a solution - Regional



FROM: Duncan, D., and B. A. Wintle. 2008. Towards adaptive management of native vegetation in regional landscapes. *in* C. Pettit, et al., eds. Landscape Analysis and Visualisation. Springer.



Prioritize investments

WILDLIFE CONSERVATION

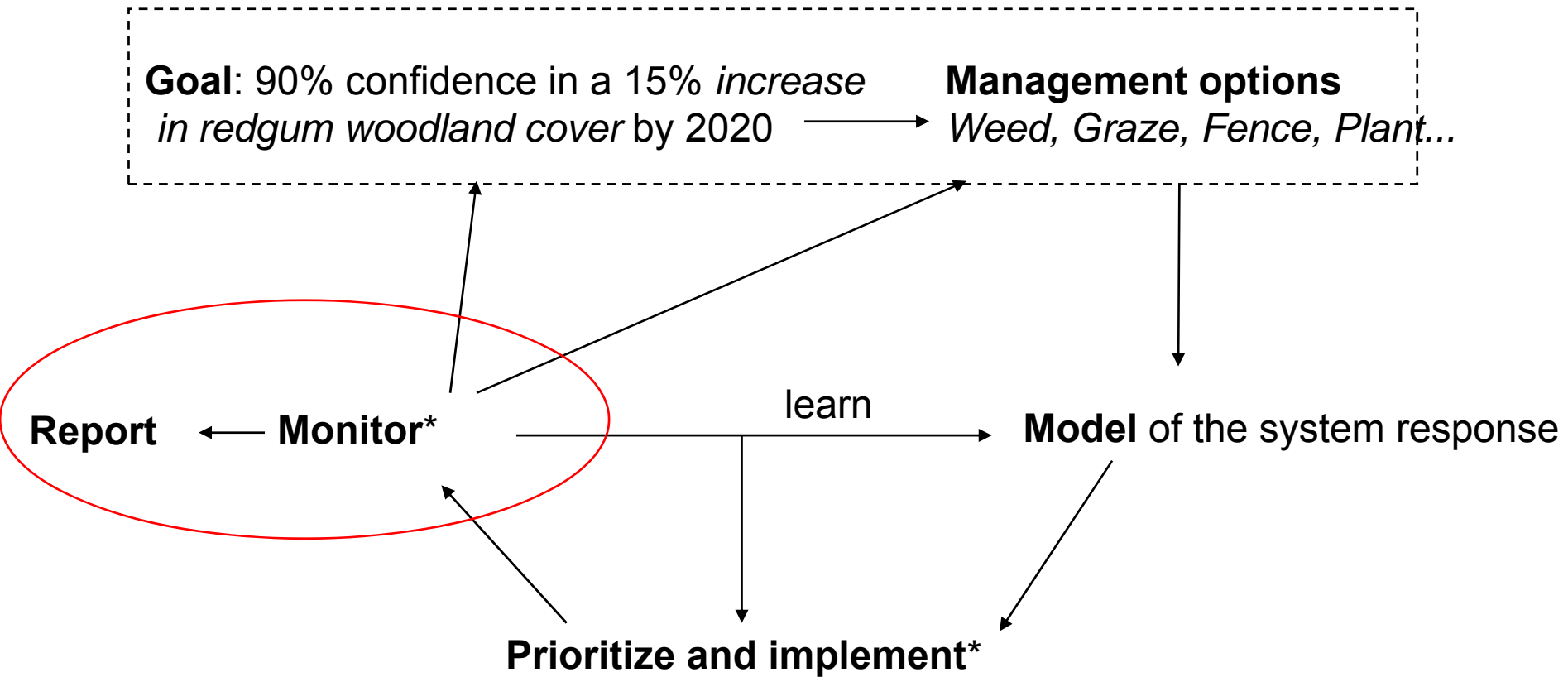
Which projects should we fund this year?

$$\text{Cost Efficiency}_i = \frac{\text{Expected Benefit}_i (\Delta \text{seedling establishment})}{\text{Cost}_i (\$)}$$

Project	Success Probability	Benefit (Ha)	Cost NPV ₅₀	Efficiency (W*P*B)/C
Fence Farm A	0.8	50	300K	0.13
Buy Farm B	0.8	50	1.0M	0.04
Weed Farm C	0.4	20	700K	0.01
etc...	Joseph, L. N., et al. 2008. <i>Pacific conservation biology</i>			

Towards a solution - Regional

WENTLING/GRUBBS ET AL.



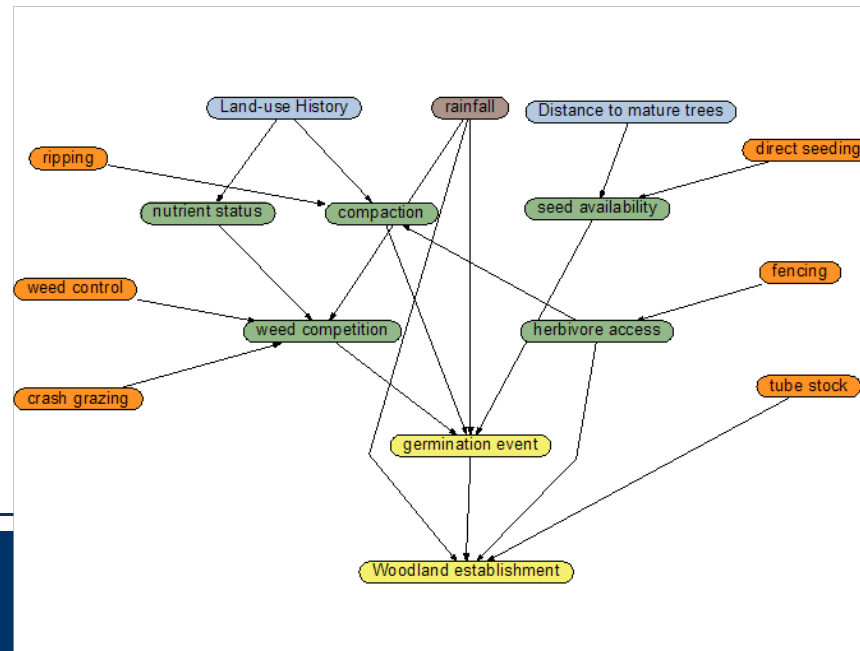
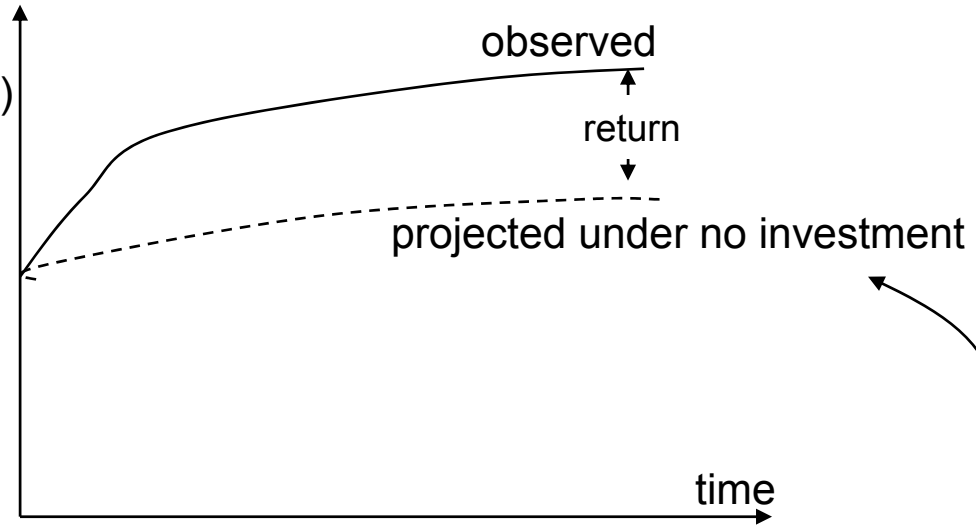
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Monitoring, reporting, learning

www.eco2lab.org.au/bs/1116



Woodland established (Ha)





National level investment

www.ecdc.europa.eu/en

- Multiple priorities and complex objectives
- Many possibly performance measures
- Need to assess projects that address more than one priority
- Integration of monitoring and reporting results across multiple projects (at multiple scales)



Keeping the Audit Office happy

www.aeda.gov.au

- A coherent logic and a plan for demonstrating benefits (medium and long-term) from investment – not a glorious 5yr success story.
- It's all about the models



- Formal models of cause and effect underpin prioritization of investments, reporting and learning
- A national institution for synthesis of reporting on, and learning about investments?



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Australian Government

Department of the Environment and Water Resources

Melbourne 2008

αεδα

Applied Environmental Decision Analysis
A Commonwealth Environment Research Facility

Smart science for wise decisions