

# Bringing Science to Management: using Simulation- and Scenario-Based Approaches to Guide Decision Making in Invasive Species Management

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one tool which can do both

Rainer M. Krug<sup>1,2</sup>

<sup>1</sup>ESE, Université Paris Sud XI, Orsay, France

<sup>2</sup>Centre for Invasion Biology, Stellenbosch University, South Africa

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3 How to make it accessible

# Drakensberg



# Invasive Alien Plants



# Invasive Alien Plants



GOD'S WINDOW  
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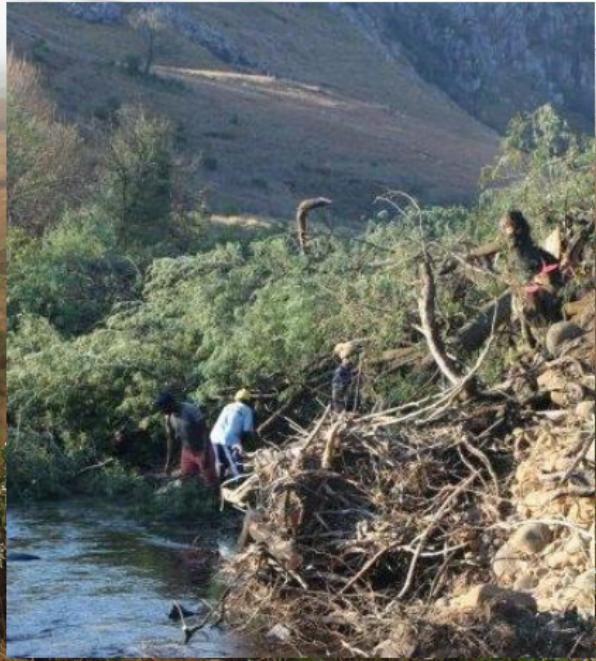
<http://hcvv.blogspot.fr/2012/06/they-call-it-gods-window.html>

# Invasive Alien Plants



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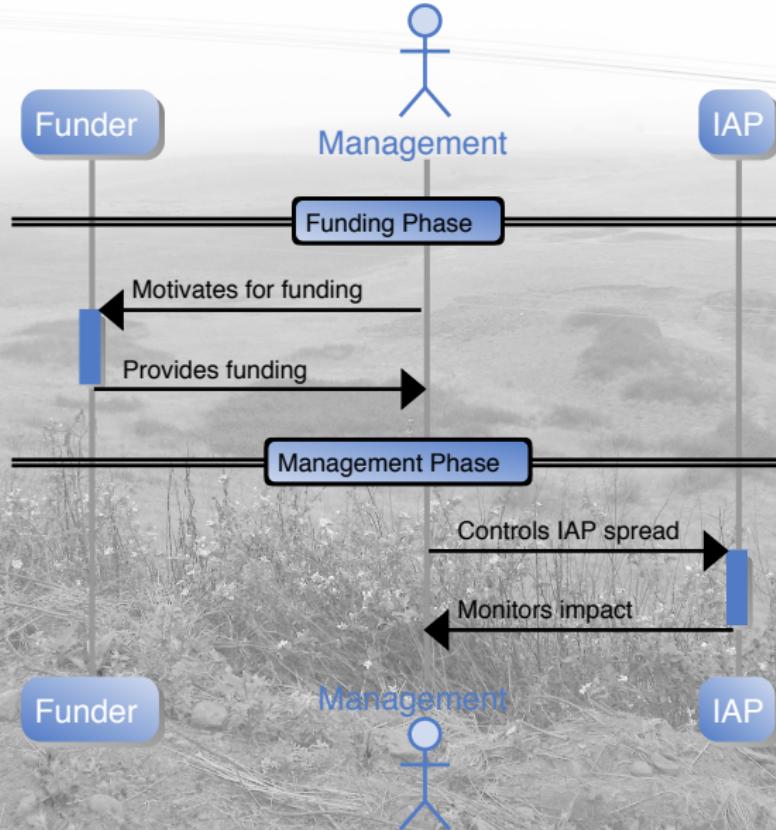
<http://hcvv.blogspot.fr/2012/06/they-call-it-gods-window.html>



<http://www.drak.co.za/news1202.html>



# IAP Management II

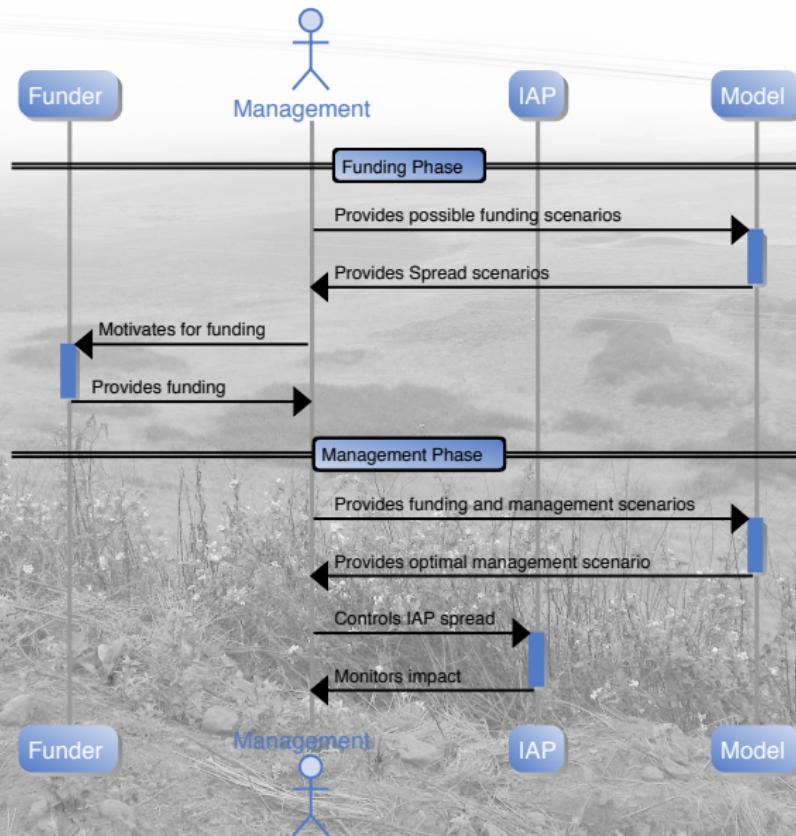


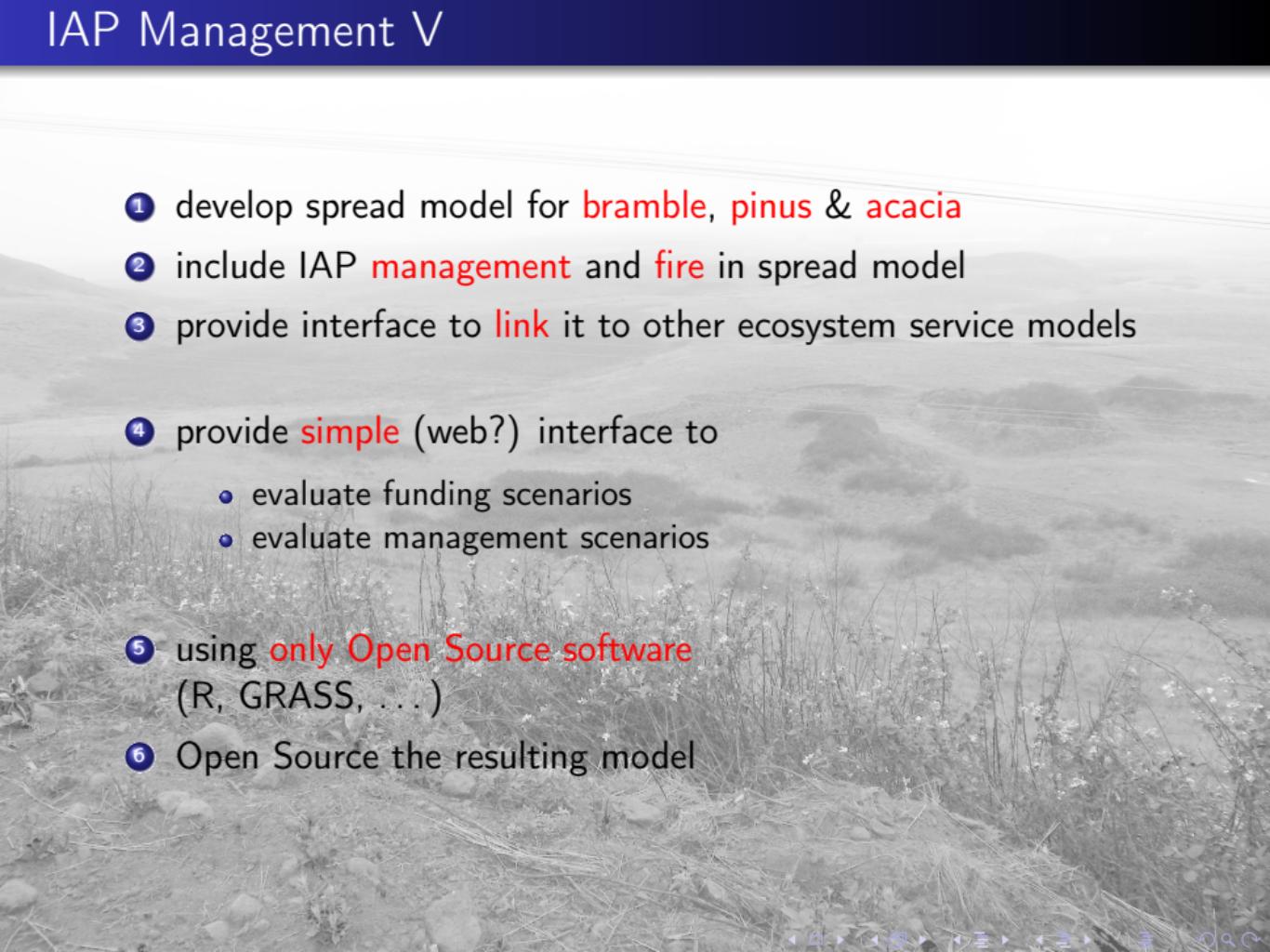
need for

- more objective
- more transparent
- easier to communicate
- more efficient

approach to motivate for & use of funding for IAP control

# IAP Management IV



- 
- ① develop spread model for bramble, pinus & acacia
  - ② include IAP management and fire in spread model
  - ③ provide interface to link it to other ecosystem service models
  - ④ provide simple (web?) interface to
    - evaluate funding scenarios
    - evaluate management scenarios
  - ⑤ using only Open Source software  
(R, GRASS, ...)
  - ⑥ Open Source the resulting model

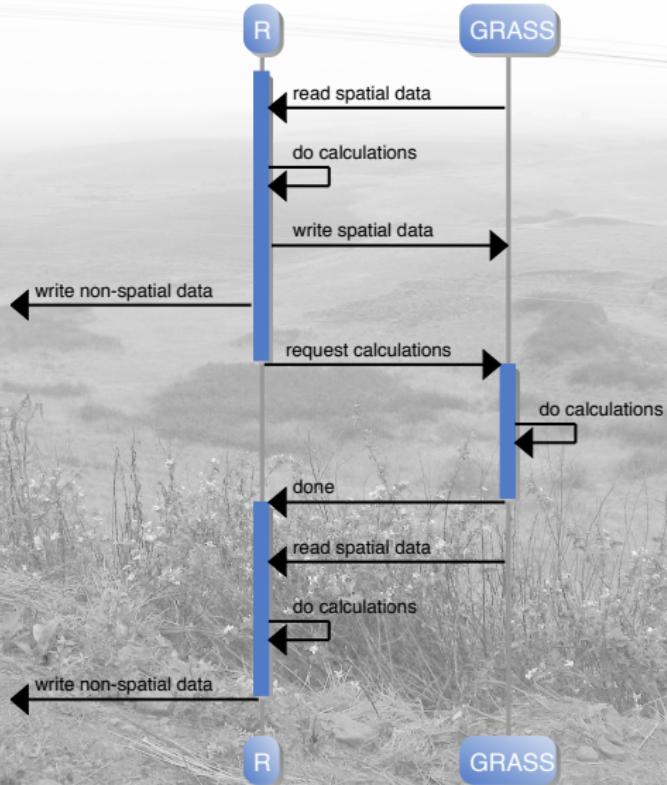


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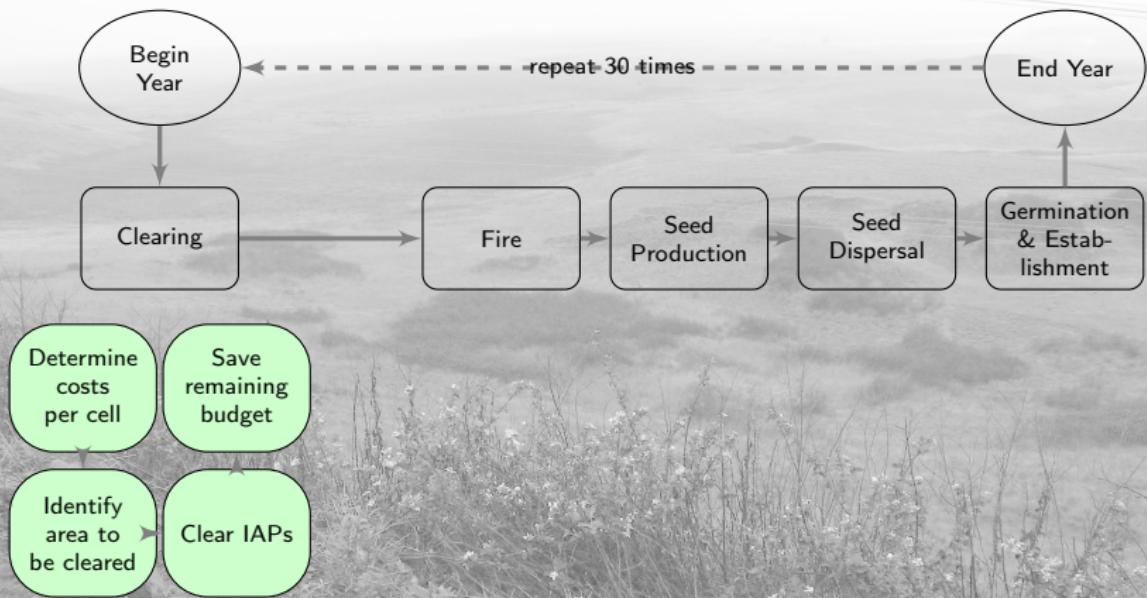


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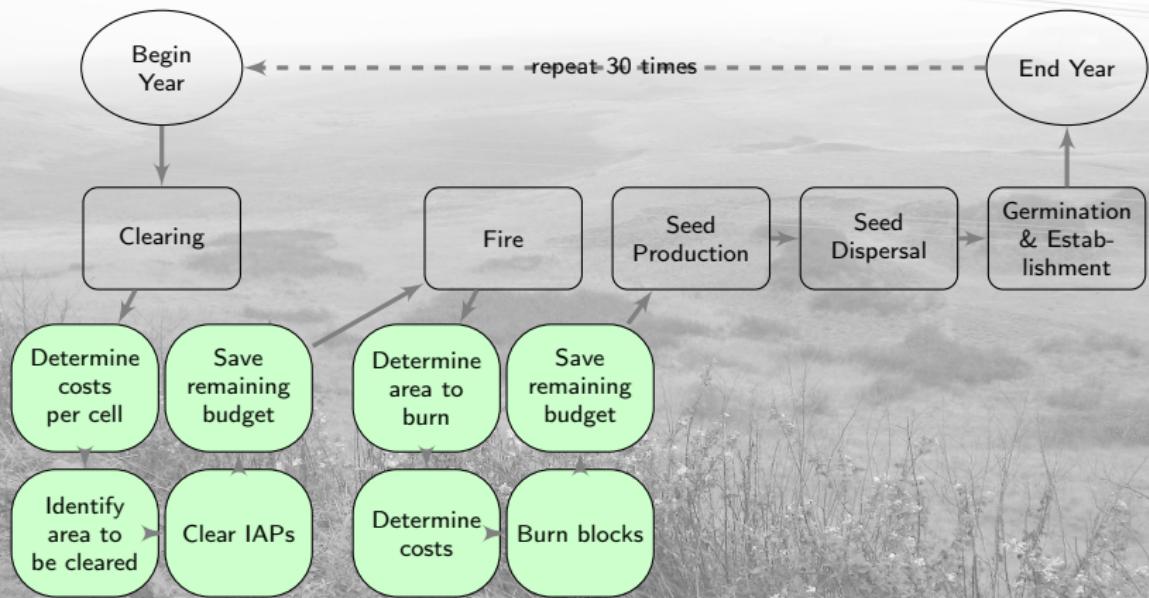
# Simulation



# The model



# The model





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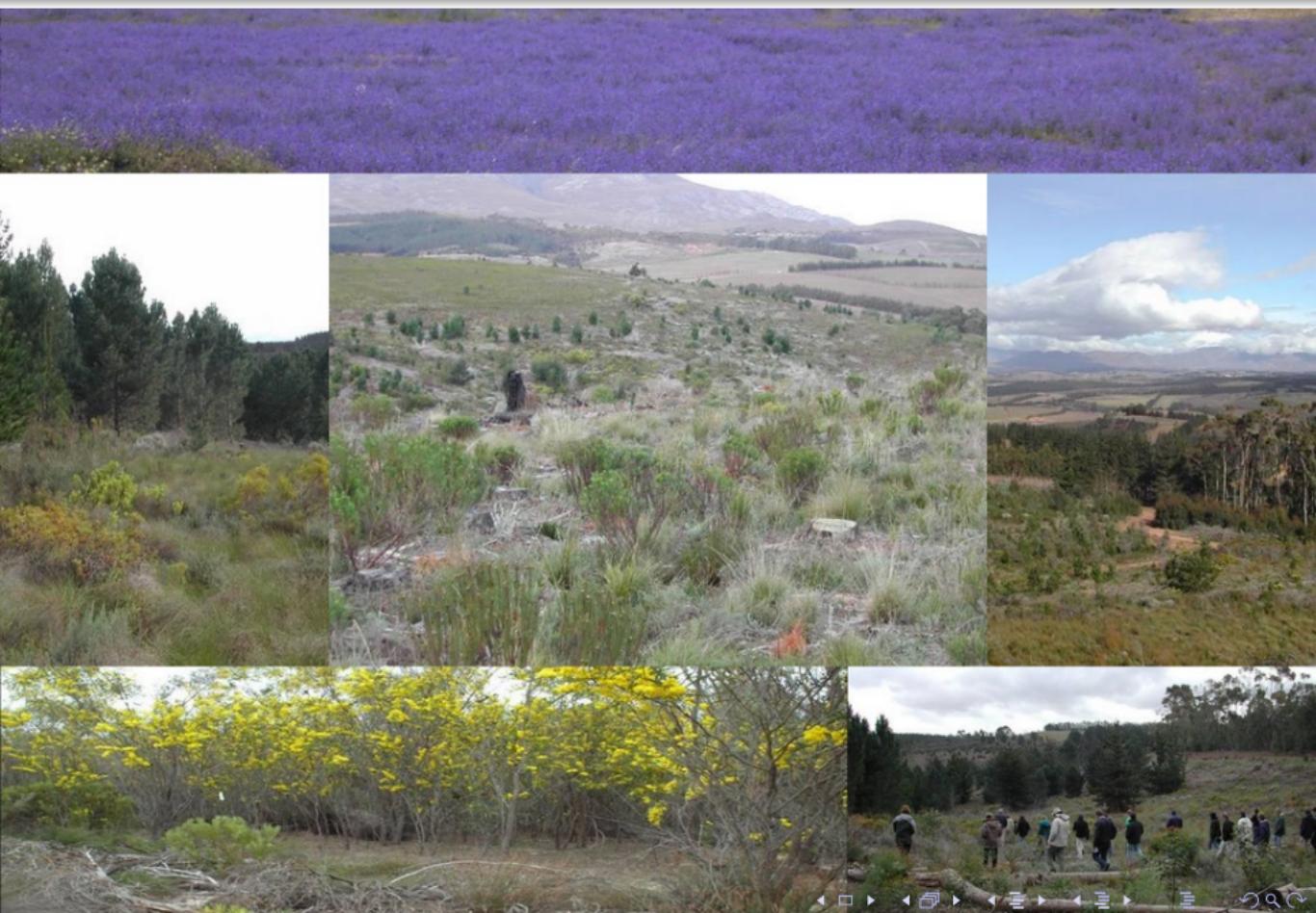
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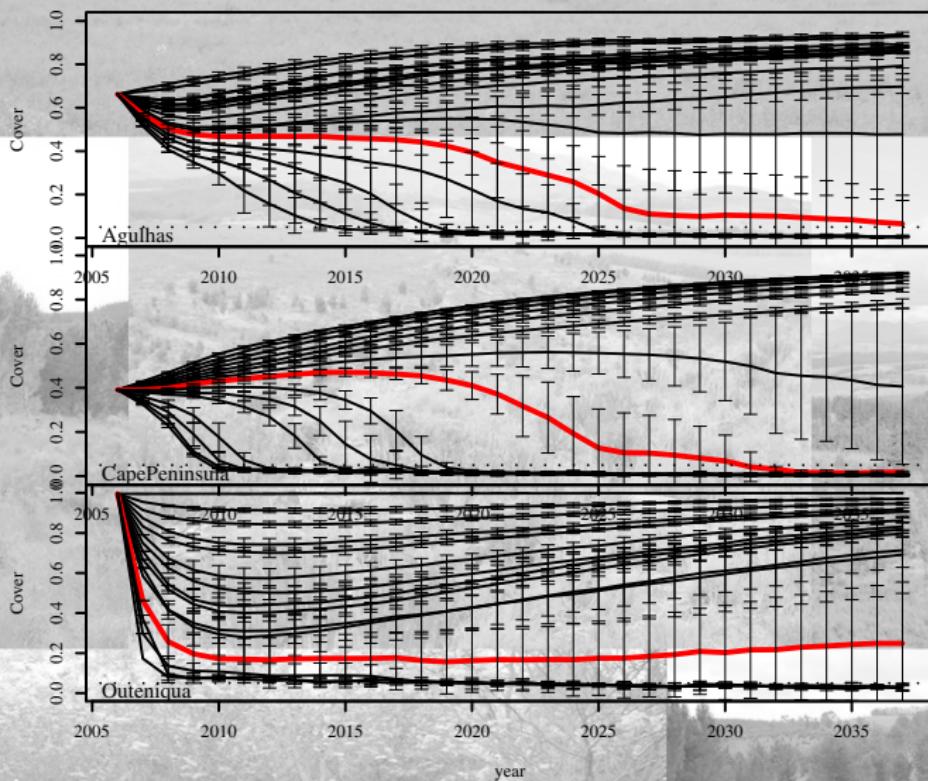
github.com/rkrug



# Optimising in Fynbos

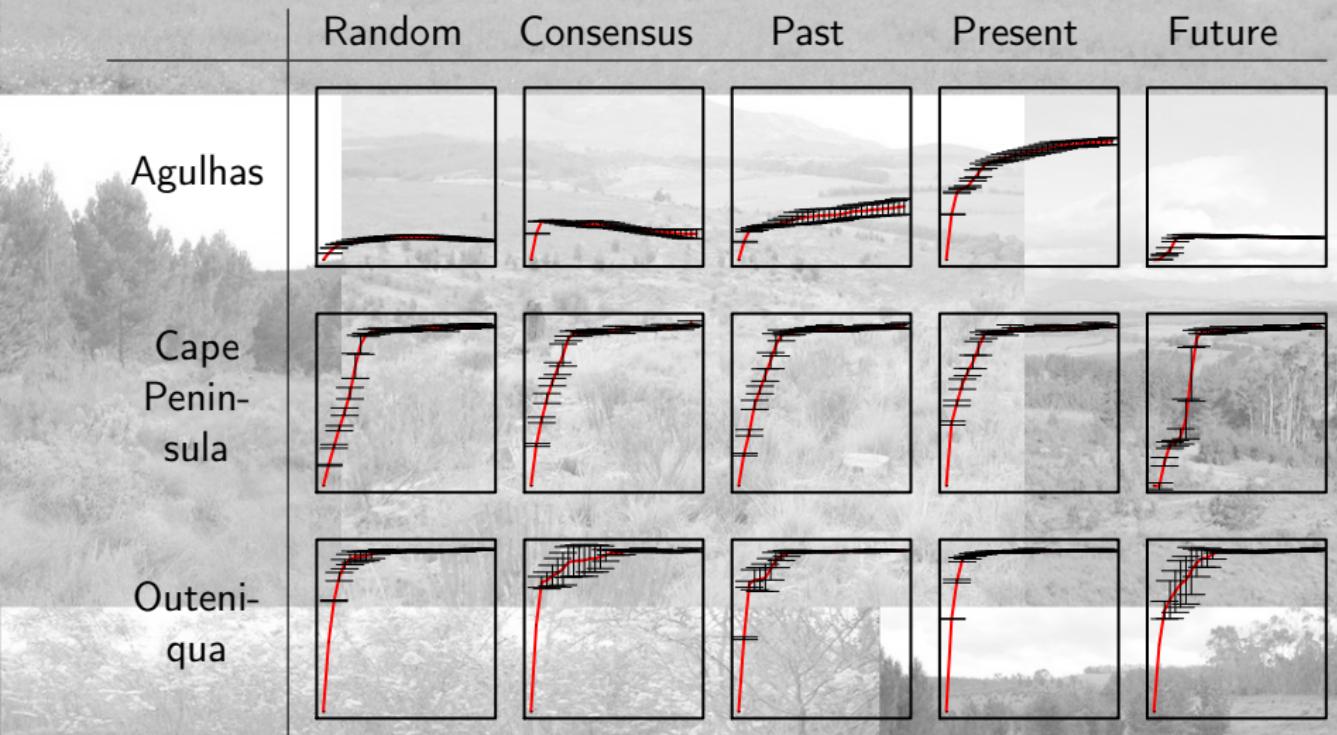


# Different Funding Scenarios



Krug, R. M., Roura-Pascual, N., & Richardson, D. M. (2010). Clearing of invasive alien plants under different budget scenarios: using a simulation model to test efficiency. *Biological Invasions*, 12(12), 4099–4112. doi:10.1007/s10530-010-9827-3

# Different Management Scenarios





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# User Interface II



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# User Interface III



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# Where we are

- 
- ① Developing generic spread model
  - ② Parametrize spread model
  - ③ Identify ecosystem service models
  - ④ Develop simple interface

Bringing Science and management together?



# Acknowledgements

- This project is financed by Ezemvelo KZN Wildlife.
- Software used (OpenSource)
  - Presentation:
    - LyX <http://www.lyx.org>
    - L<sup>A</sup>T<sub>E</sub>X <http://www.latex-project.org/>
    - Beamer  
<https://bitbucket.org/rivanvx/beamer/wiki/Home>
  - Charts
    - PlantUML <http://http://plantuml.sourceforge.net>
  - and others

## Contact info



Rainer@krugs.de,  
[http://github.com/rkrug/INTECOL\\_2013\\_Optimizing](http://github.com/rkrug/INTECOL_2013_Optimizing)