

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

—
one tool which can do both

Rainer M. Krug^{1,2}

¹ESE, Université Paris Sud XI, Orsay, France

²Centre for Invasion Biology, Stellenbosch University, South Africa

Contents

- 1 Framework for the Drakensberg
- 2 Optimising in Fynbos
- 3 How to make it accessible

Drakensberg



Invasive Alien Plants



Invasive Alien Plants



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

Invasive Alien Plants



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

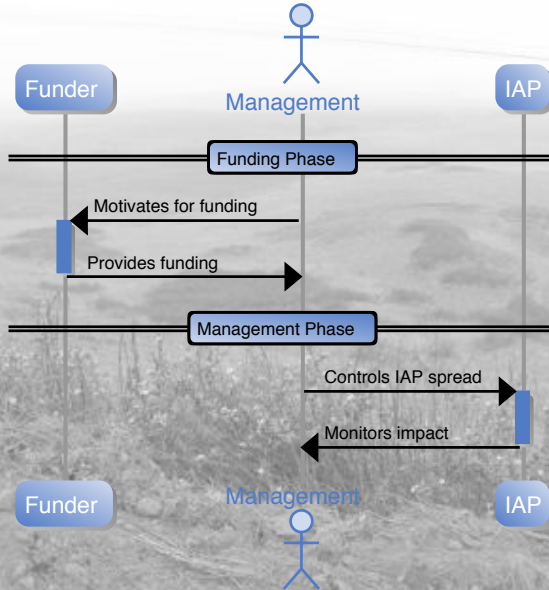


<http://www.drak.co.za/news1202.html>

IAP Management I



IAP Management II

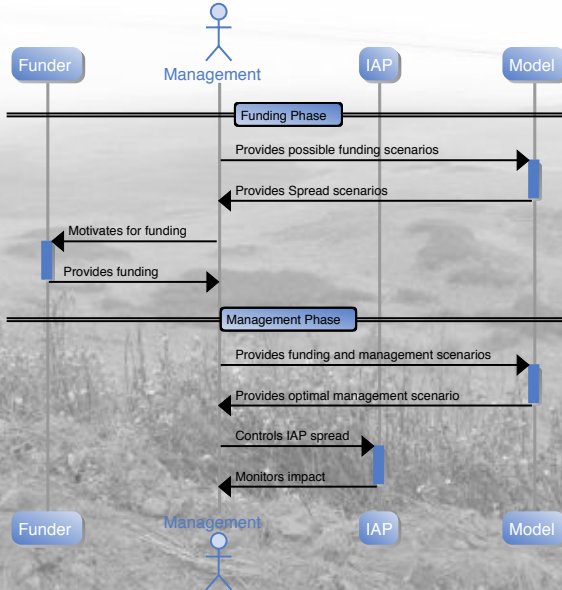


need for

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

approach to motivate for & use of funding for IAP control

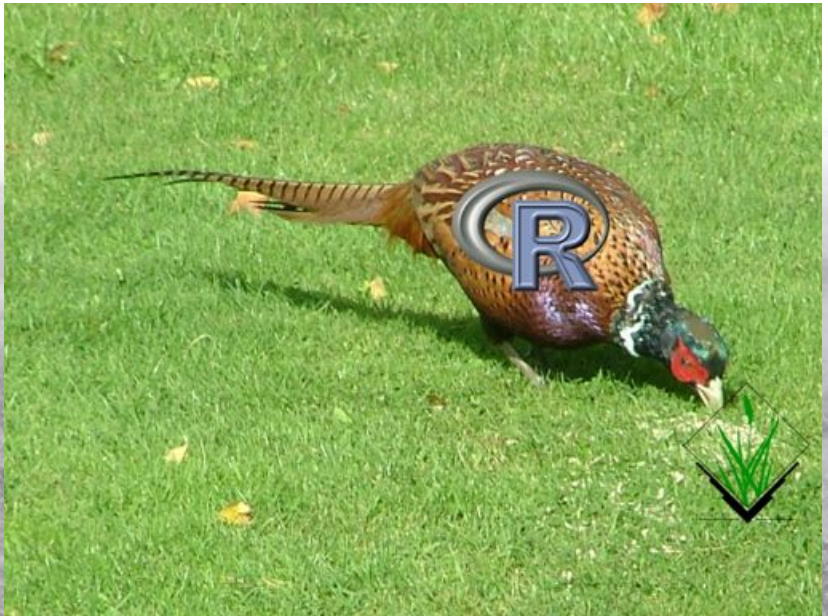
IAP Management IV



- 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

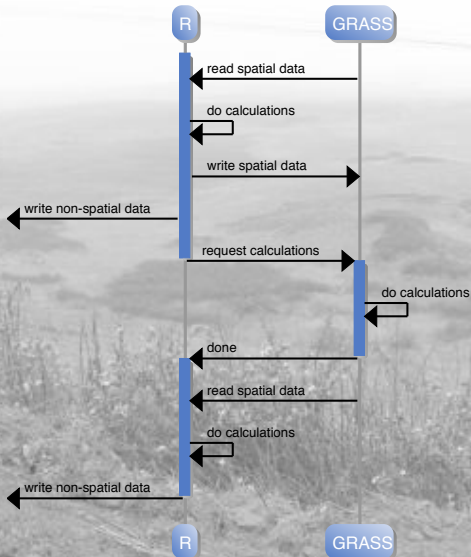


© Dave B. Wiese



© Dave B. Wieseman, edited by myself

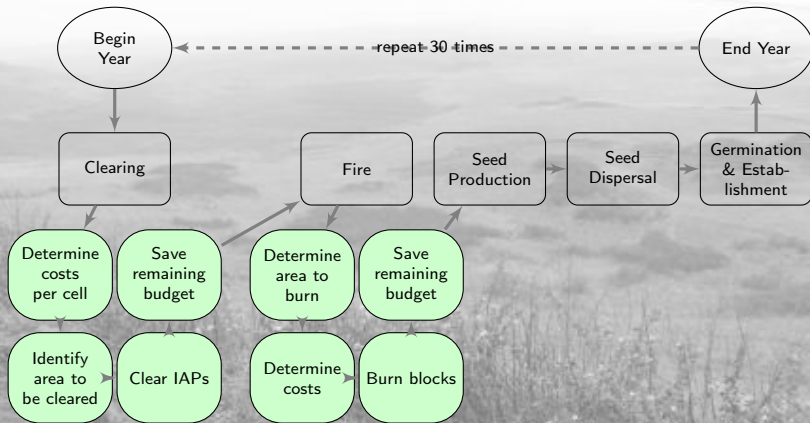
Simulation



The model



The model





© Raimond Spekking / CC-BY-SA-3.0 (via Wikimedia Commons) [CC-BY-SA-3.0 (<http://creativecommons.org/licenses/by-sa/3.0>) or GFDL (<http://www.gnu.org/copyleft/fdl.html>)], via Wikimedia Commons



© <http://lerablog.org/business/management/ensure-the-safety-of-your-warehouse/>

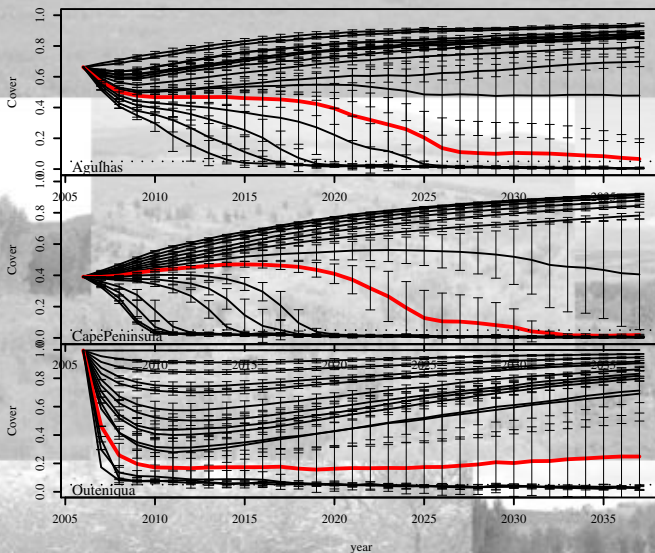




Optimising in Fynbos

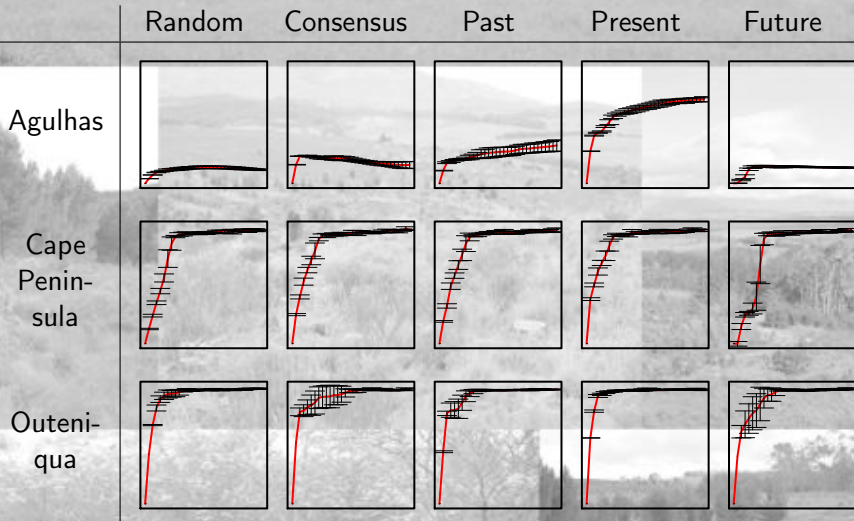


Different Funding Scenarios



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







© <http://uxmag.com/articles/the-dirtiest-word-in-ux-complexity>

User Interface II




© <http://uxmag.com/articles/the-dirtiest-word-in-ux-complexity>

User Interface III



© <http://uxmag.com/articles/the-dirtiest-word-in-ux-complexity>

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:
 - L^AT_EX <http://www.lyx.org>
 - L^AT_EX <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