PROTECTED AREAS

EFFECTIVENESS, DESIGN AND THE DIVIDE BETWEEN CONSERVATION PLANNING SCIENCE AND PRACTICE

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Are Protected Areas Successful?

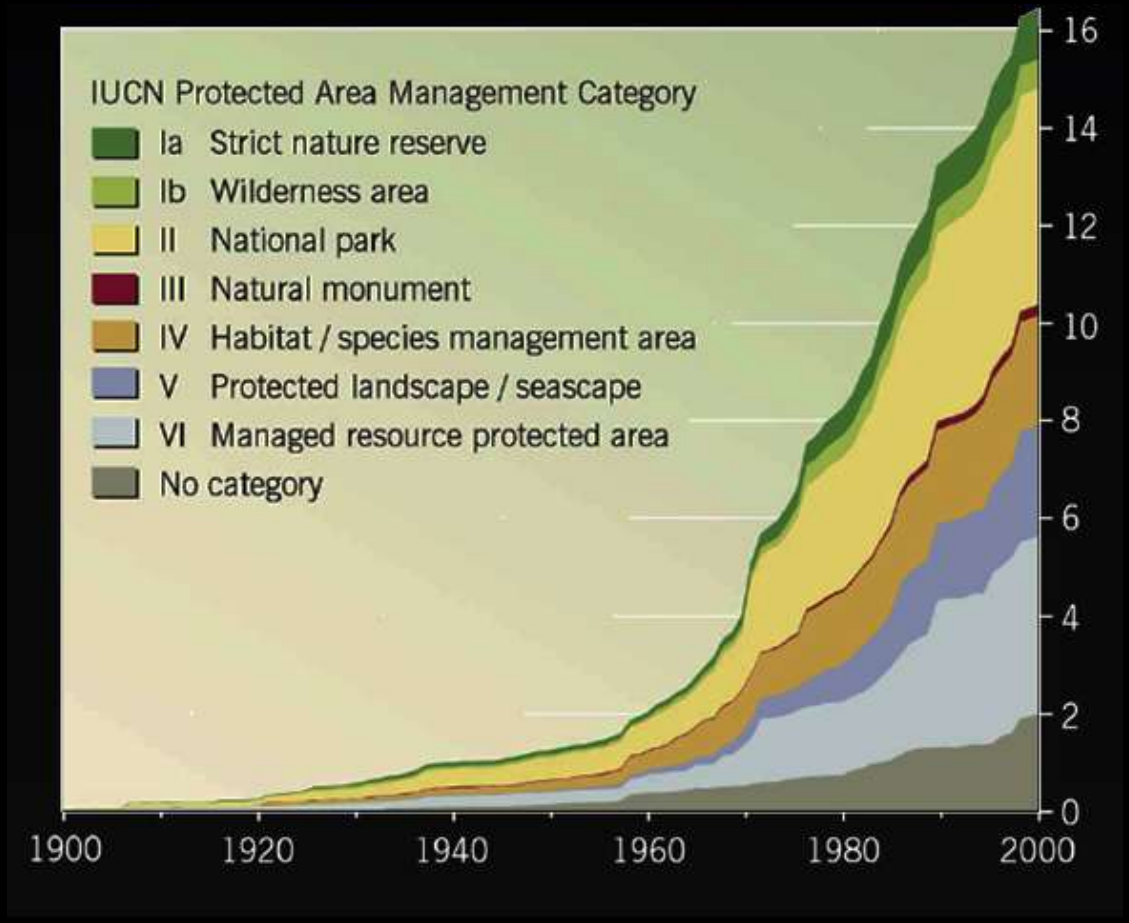
Measures of “effectiveness”

Reduced deforestation and Leakage

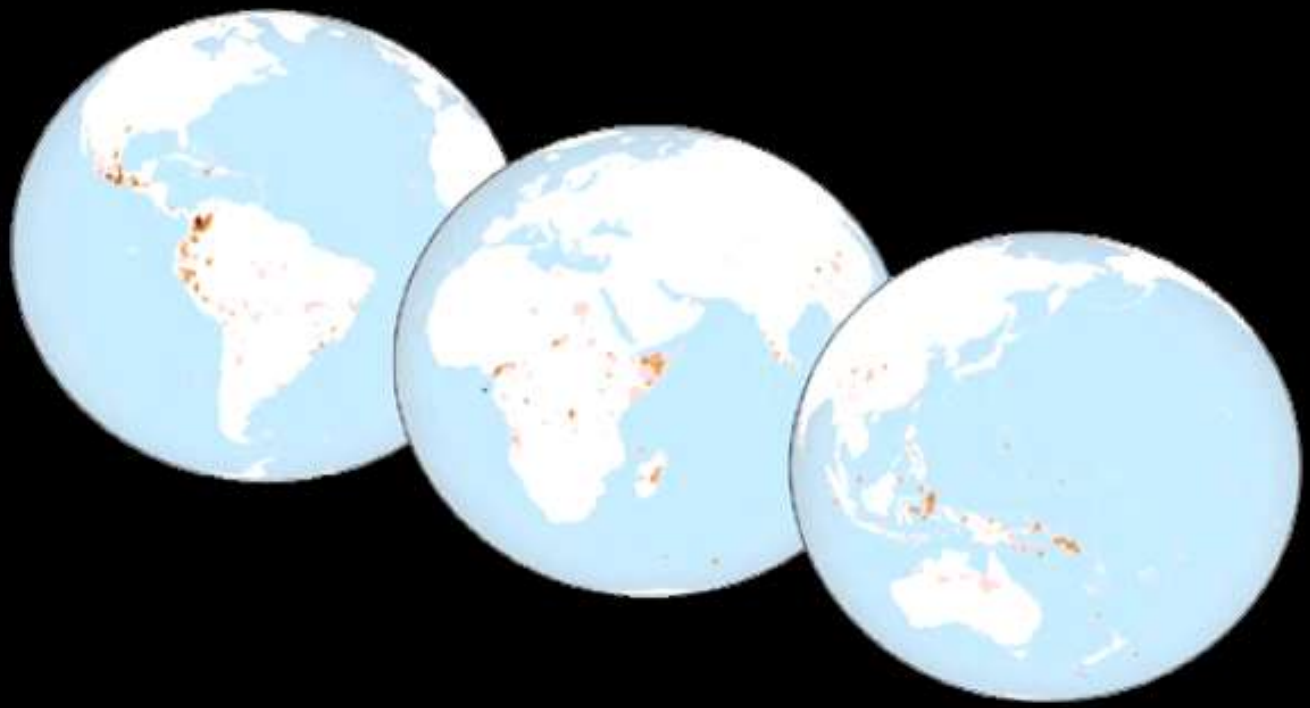
What are the causes of PA failure?

Do modern reserve design tools help?

Protected Areas

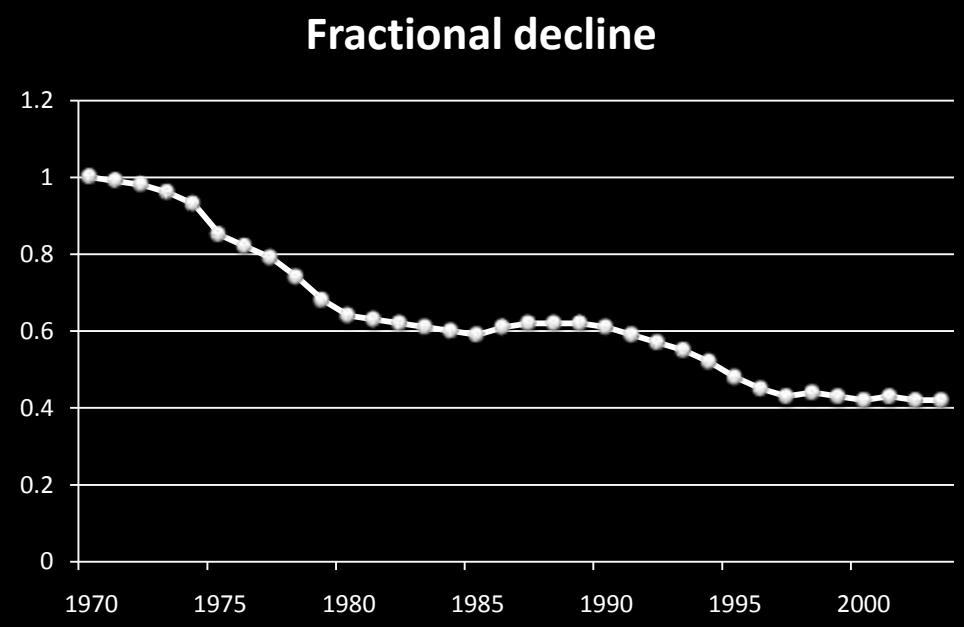


Species Coverage



Effectiveness of the global protected area network…
Rodrigues et al 2004 Nature

Persistence of Populations



Population declines in African protected areas
Craigie et al. (unpublished)
Based on pop. trends for 65 spp, 530 pop, 75PAs

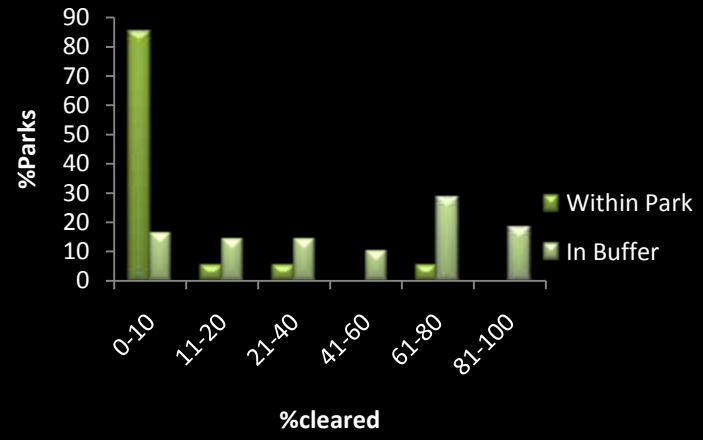
Avoided Deforestation

Lost of > 60% of forests
in Borneo and Sumatra's PAs
Gaveau et al. 2007; Curran et al. 2004

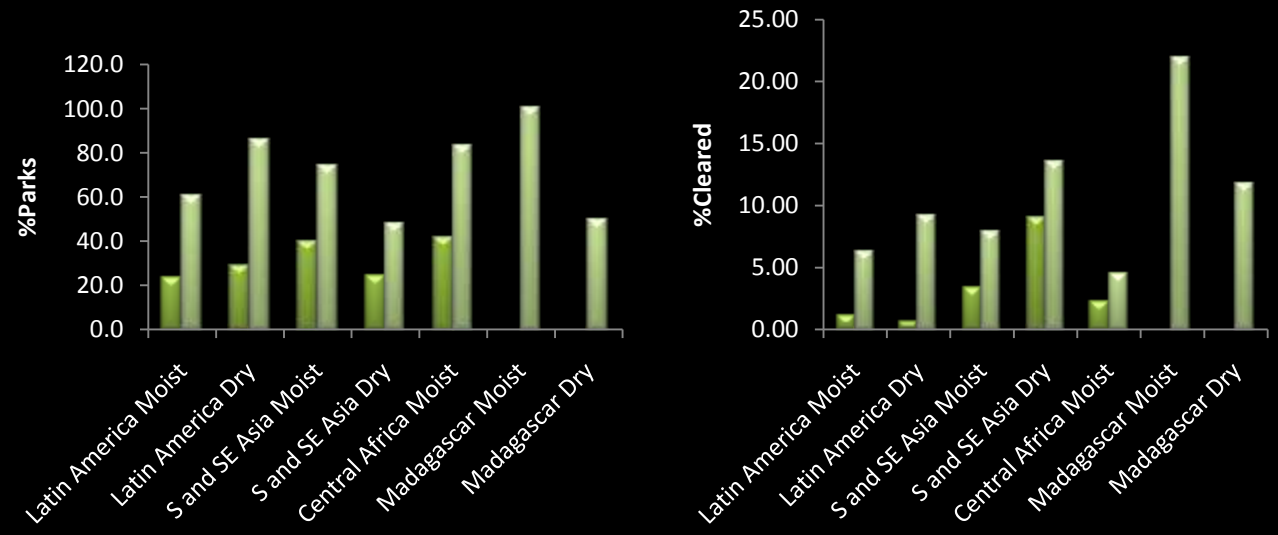
Illegal logging in >25% tropical PAs
DeFriers et al 2007

Overall, PAs do better than adjacent lands

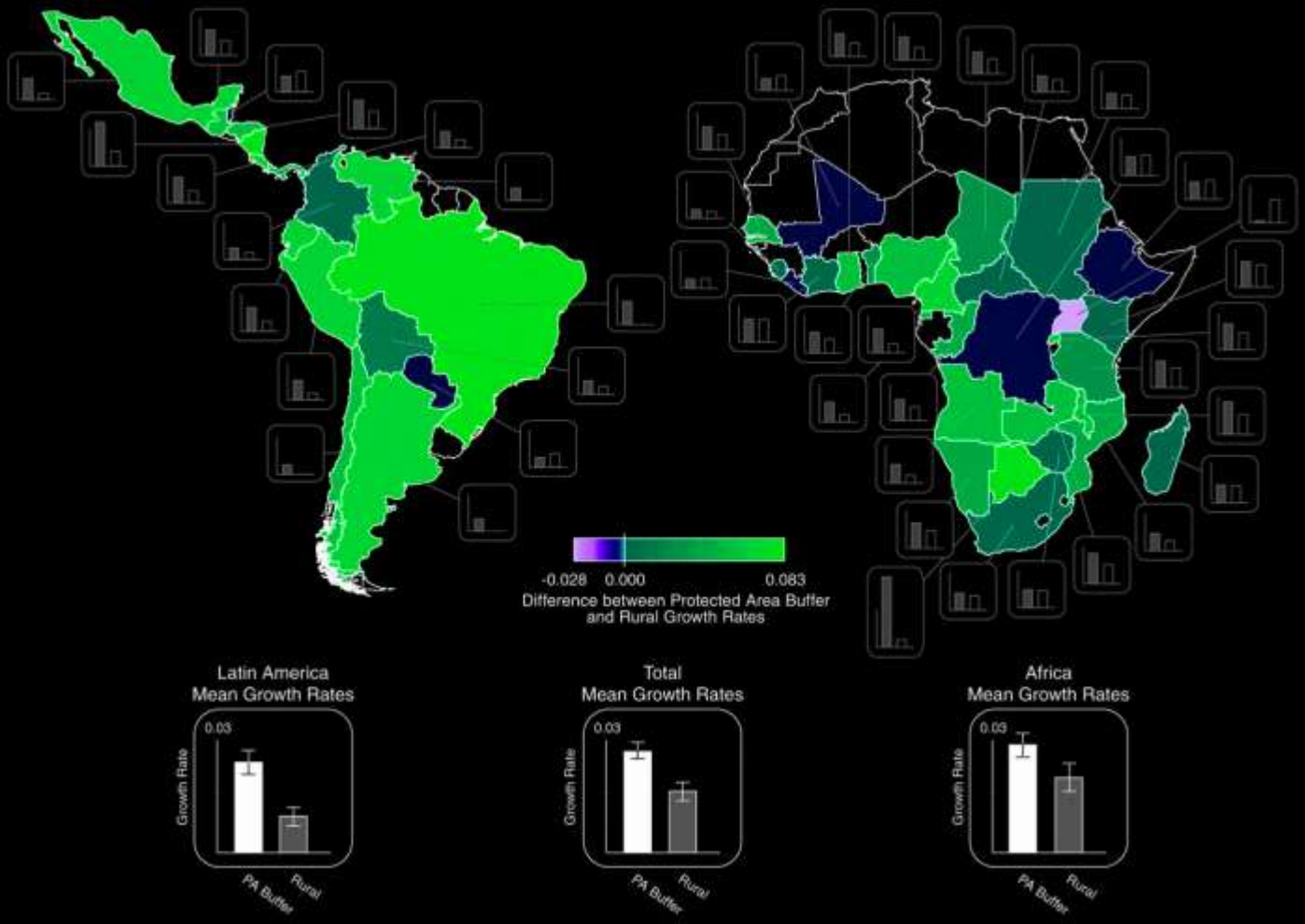
Brunner et al 2001 Science — Questionaires, 93 parks; 22 countries



De Friers et al 2005 Ecol. App — Satellite , 198 Parks



Leakage

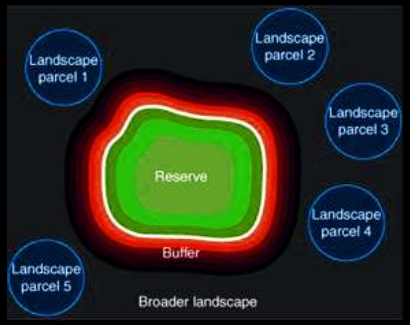


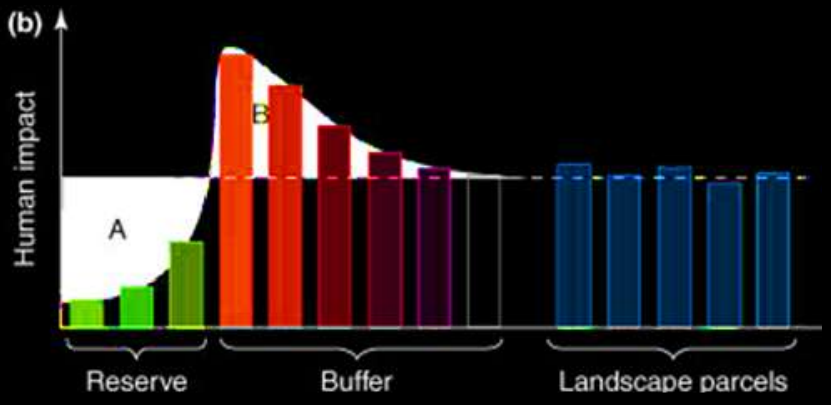
Wittemyer et al 2008 Science

Leakage

Compare

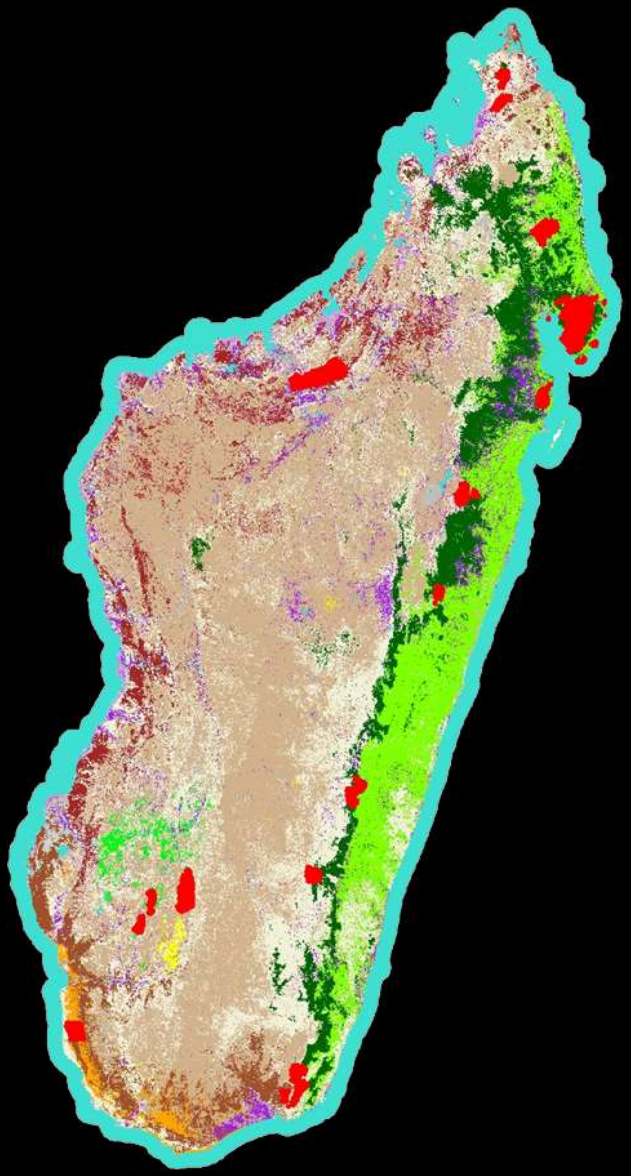
PA vs (10km) Buffer vs “Baseline”





Modified from Ewers and Rodrigues 2008 TREE

PA Effectiveness in Madagascar



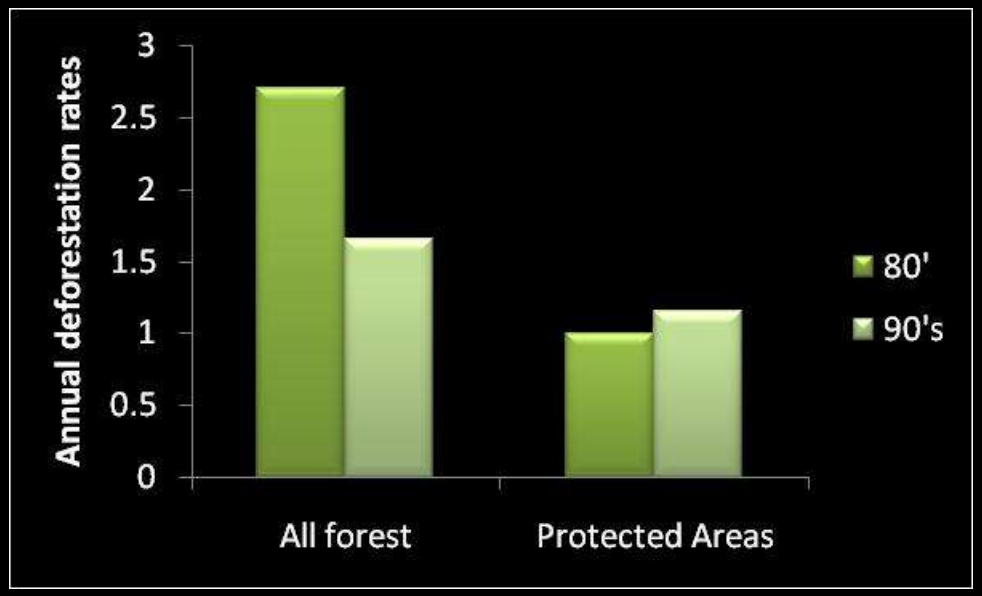
MADAGASCAR PAs AND DEFORESTATION

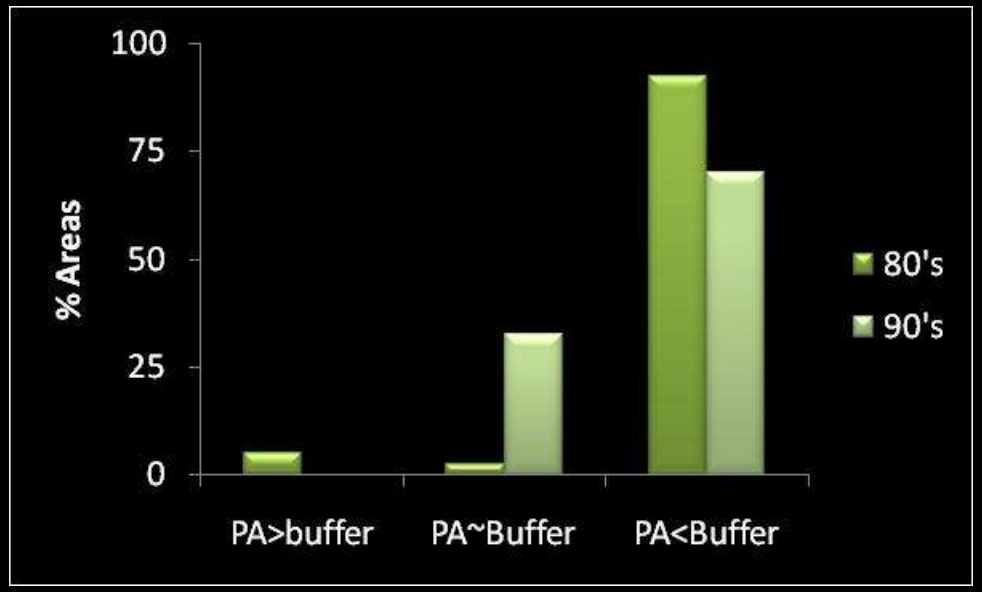
- Durban Vision (2003)
- Expand or improve effectiveness?
- International funds support PA establishment, not long term management needs

PA Effectiveness in Madagascar

Differences in loss rates	Effectiveness implications	Needed responses
PA<Buffer<Baseline	PAs effective, protect also buffer	Expand PA network
PA=Buffer<Baseline	prob. effective, protect also buffer	Expand PA network, assess awareness in Buffer
PA<Baseline<Buffer	Effective, but leakage, isolation	Improve management and education in buffer
PA<Buffer=Baseline	Effective	Expand PA network
PA=Buffer=Baseline	Ineffective	Do not expand, improve enforcement
PA> Buffer; PA>Baseline	Ineffective	Do not expand, improve enforecement

MADAGASCAR PAs AND DEFORESTATION





Overall, deforestation during 80s and 90s

Buffer >Baseline>PA

- Leakage?
- PAs at the frontier of deforestation
- Need to manage the buffer to avoid isolation effects

Additional Ongoing Work in Madagascar

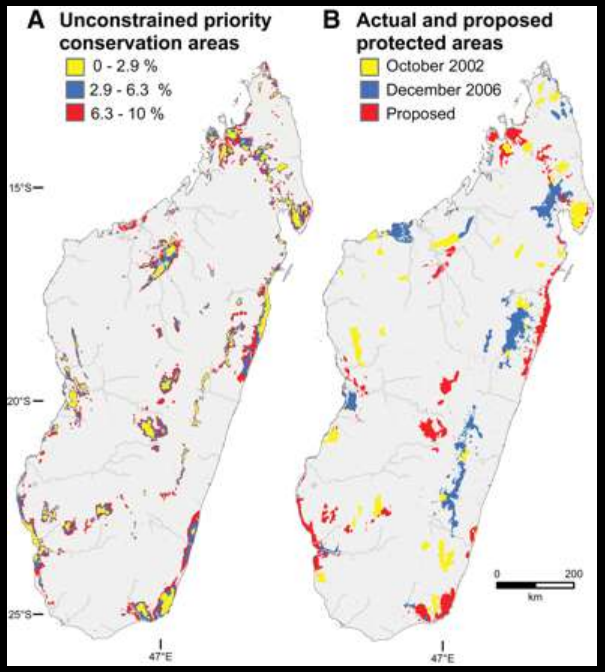
- RESPECT exchange course
  Sampling plots to evaluate illegal use in parks

- Master thesis project (Susanna Kari)
  Evaluate changes in the use of resources around Ranomafana

- Internship project (Ricardo Rocha)
  Disentangling antropogenic vs natural deforestation in parks

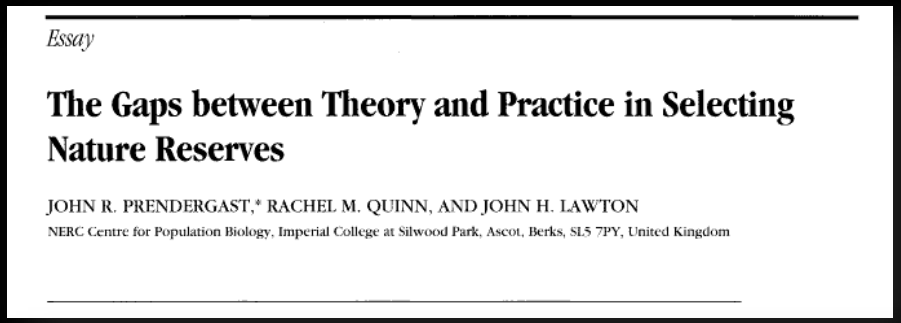
Systematic Conservation Planning

Kremen *et al.* 2008
Aligning Conservation Priorities Across Taxa in Madagascar with High-Resolution Planning Tools



SCP SOFTWARES

- WORLDMAP (1988)
- CODA (1990)
- DIVERSITY (1993)
- C-PLAN (1995)
- MARXAN (1996)
- TARGET (1996)
- ResNet (1997)
- SITES (1998)
- TAMARIN (2000)
- RESERVES.XLA (2001)
- Natureserve vista (2005)
- ZONATION (2006) –



Essay

The Gaps between Theory and Practice in Selecting Nature Reserves

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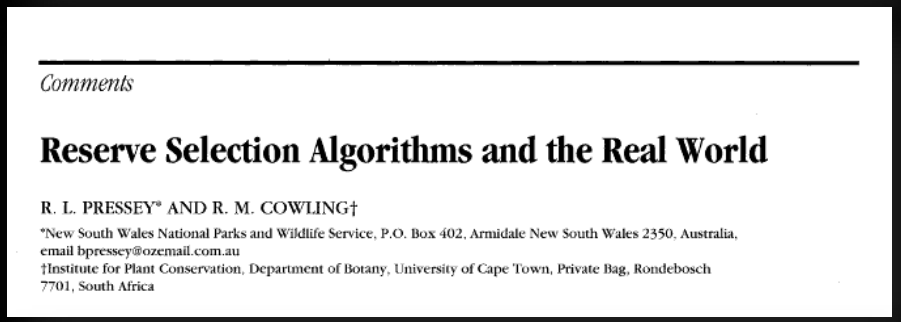

Comments

Reserve Selection Algorithms and the Real World

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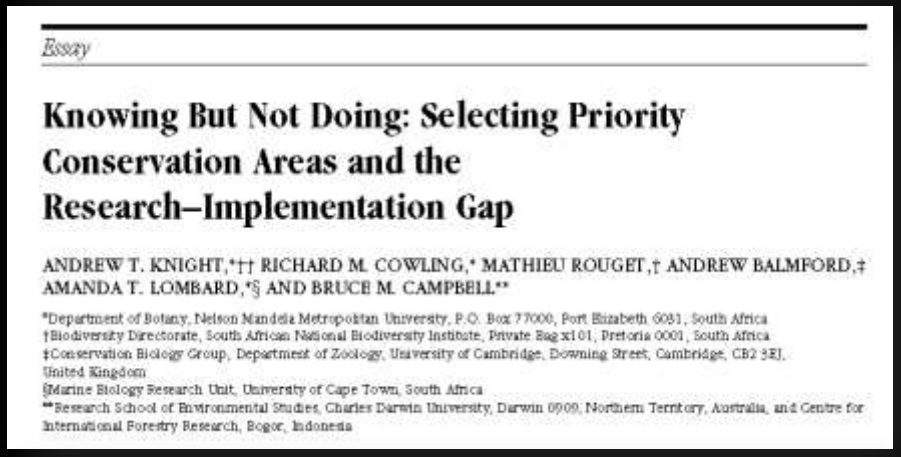

Essay

Knowing But Not Doing: Selecting Priority Conservation Areas and the Research–Implementation Gap

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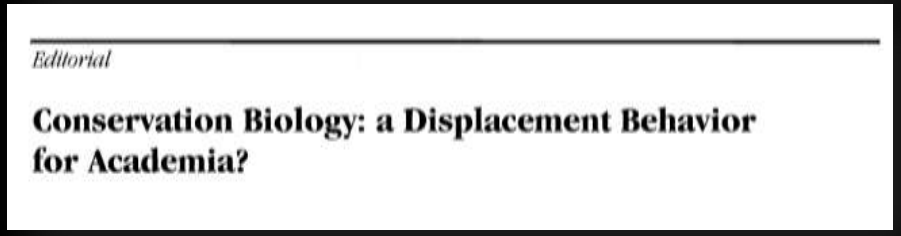
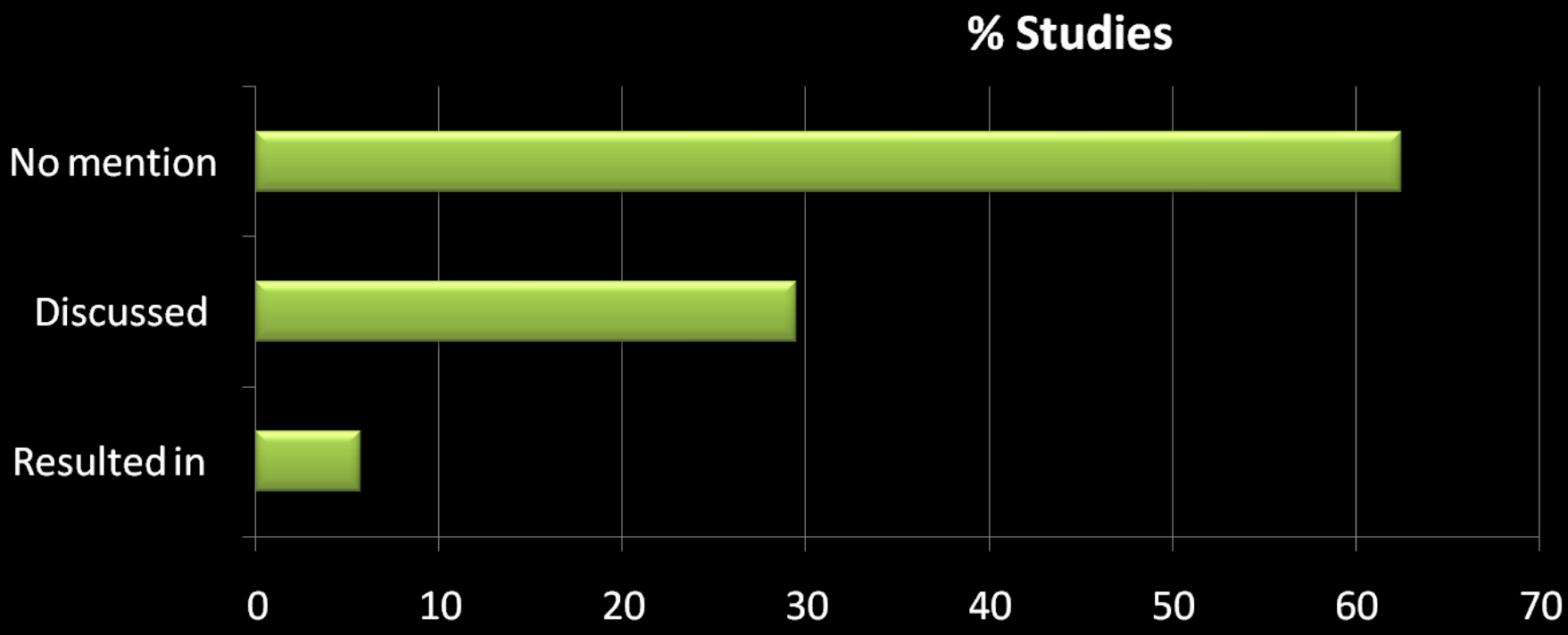
**Research School of Environmental Studies, Charles Darwin University, Darwin 0909, Northern Territory, Australia, and Centre for International Forestry Research, Bogor, Indonesia



Editorial

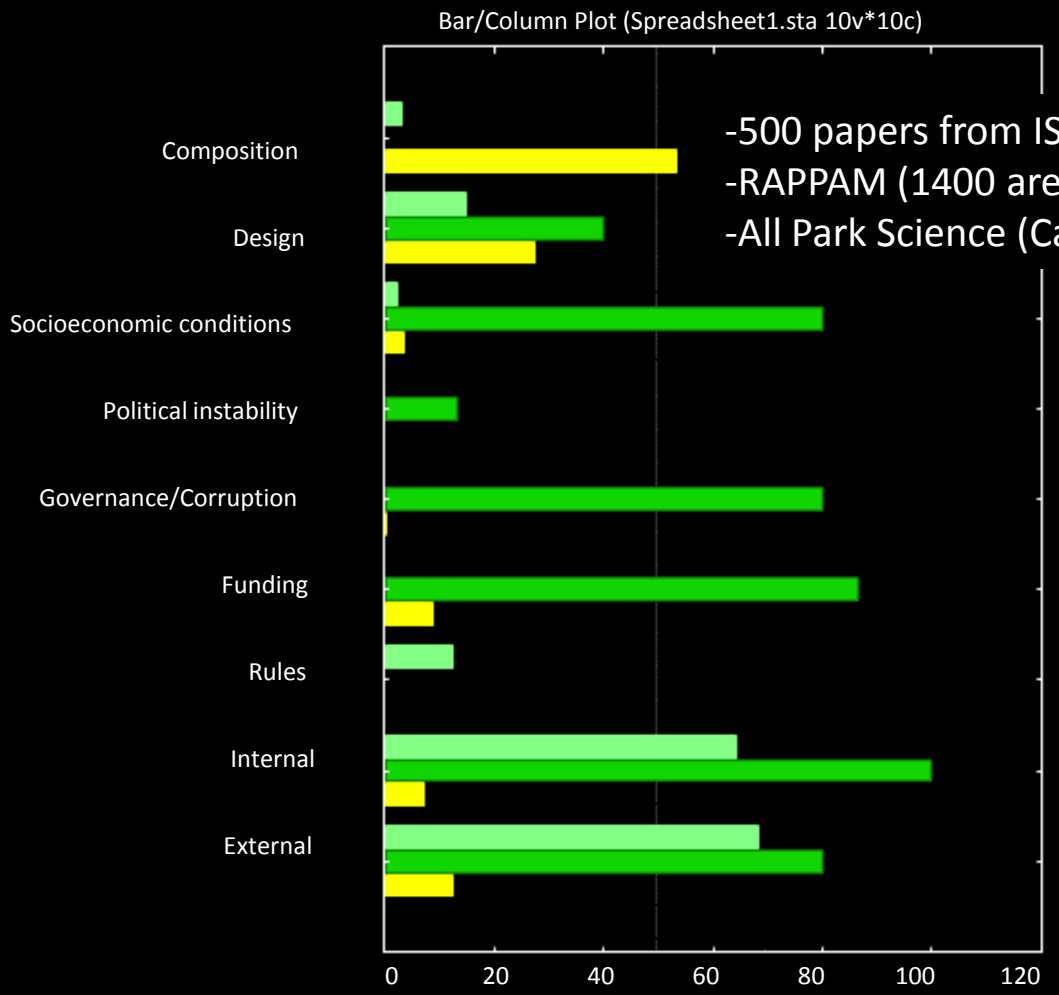
Conservation Biology: a Displacement Behavior for Academia?

Where Did We Go Wrong?

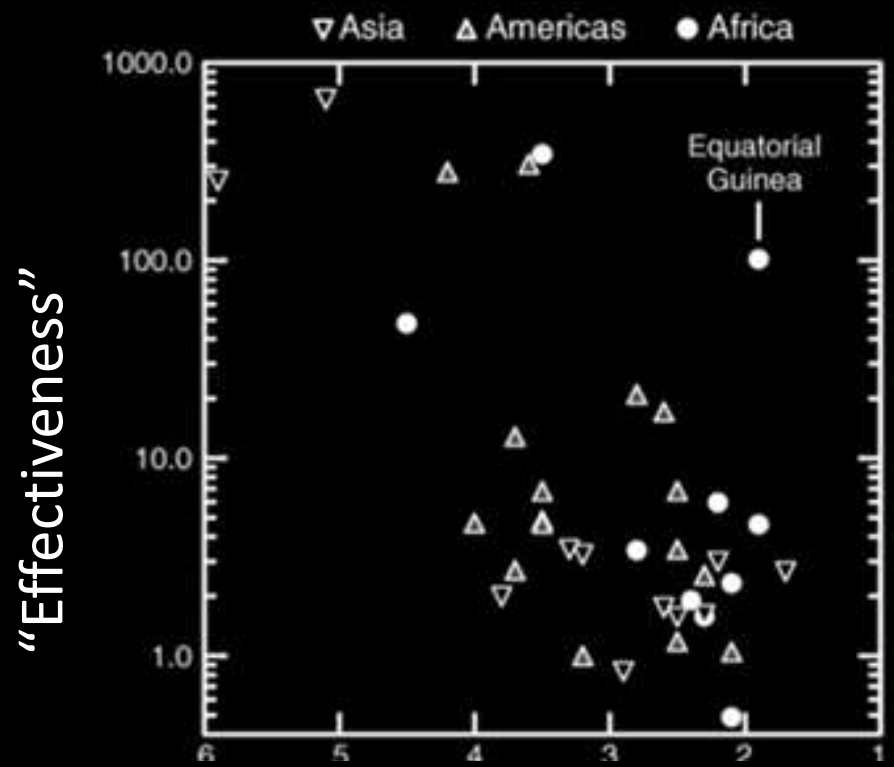


Knight et al 2008

ADDRESSING THE DIVIDE BETWEEN SCIENCE AND PRACTICE IN CONSERVATION PLANNING



-500 papers from ISI
-RAPPAM (1400 areas, 15 countries
-All Park Science (Canada)



"Effectiveness"

Corruption Perception Index

Wright et al 2007 Ecc App


Selection frequency
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Not included in analysis

TAKE HOME MESSAGE

- Rapid development of conservation planning tools
- Tools rarely used in practice
- We need more understanding
  - drivers of threat
  - socio-economic limitations
- Madagascar,
  - a unique place to explore these issues
  - a unique place in urgent need for applications

Thanks to:
I.Hanski, J.T. Lehtonen, R.Virtantanen, P.Wright, J.Jernvall for discussions
Respect students 08,09; for getting me involved
S.Kari, J.F.Eklund for their work used in this presentation