In situ data collection

...for monitoring biodiversity outcomes inside and outside protected areas

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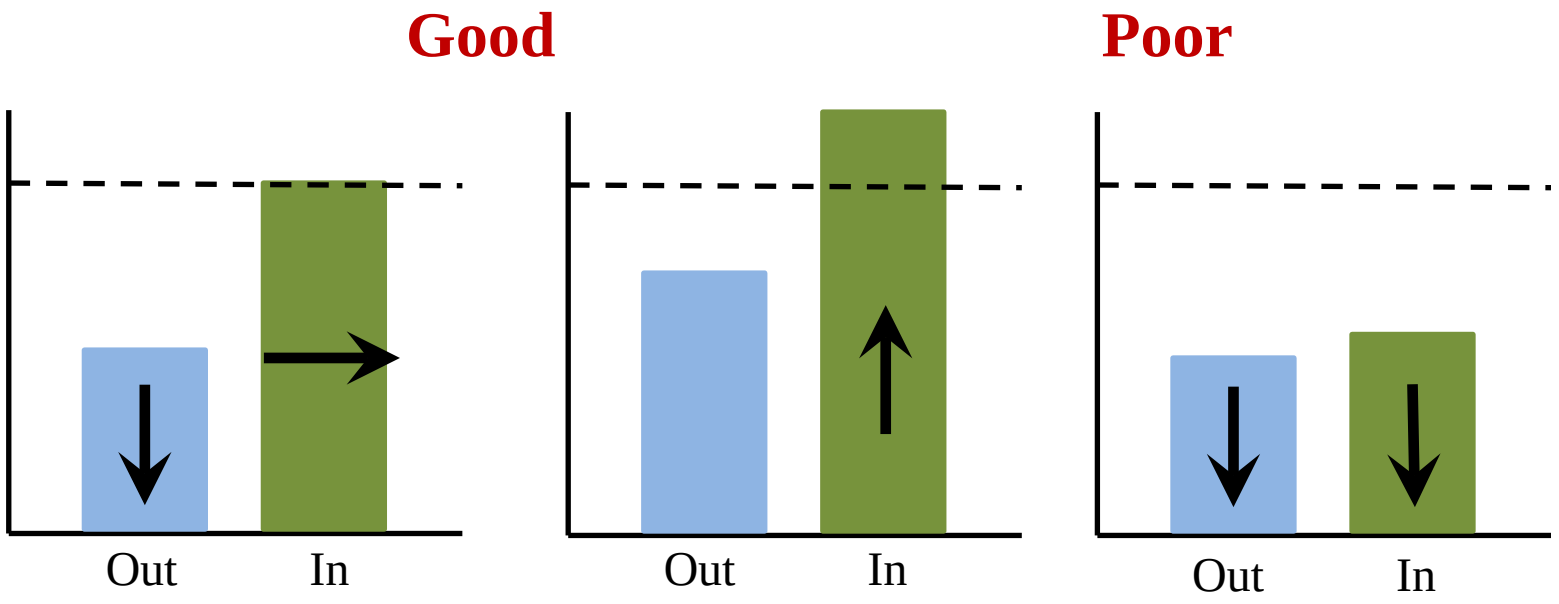
In situ data collection

…is essential for assessing
and monitoring the
ecological performance
(conservation effectiveness)
of protected areas,
i.e. the degree to which parks are meeting their biodiversity goals and achieving conservation outcomes.

After park establishment

Ecological performance / conservation effectiveness

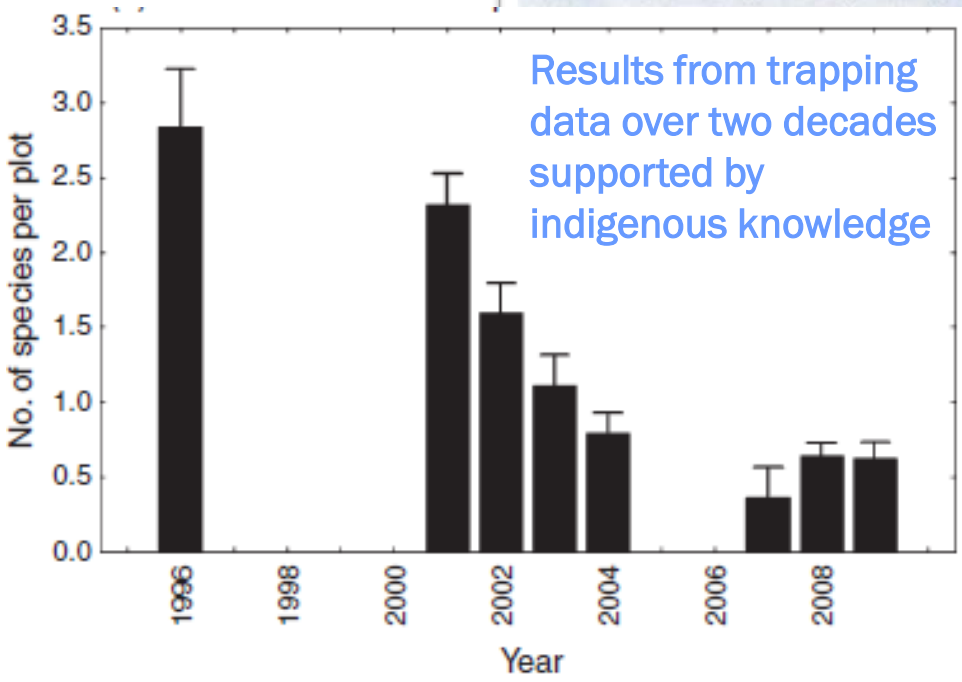


Why is it critical?

- Simply cannot assume that the existence of a park means that its biodiversity goals are being met
- Ecological performance is context dependent, taxonomically variable, and in situ data are needed for evidence based policy and management

Boundaries can't stop the loss of Joshua trees.... Achim Steiner

Small mammal declines in Kakadu National Park

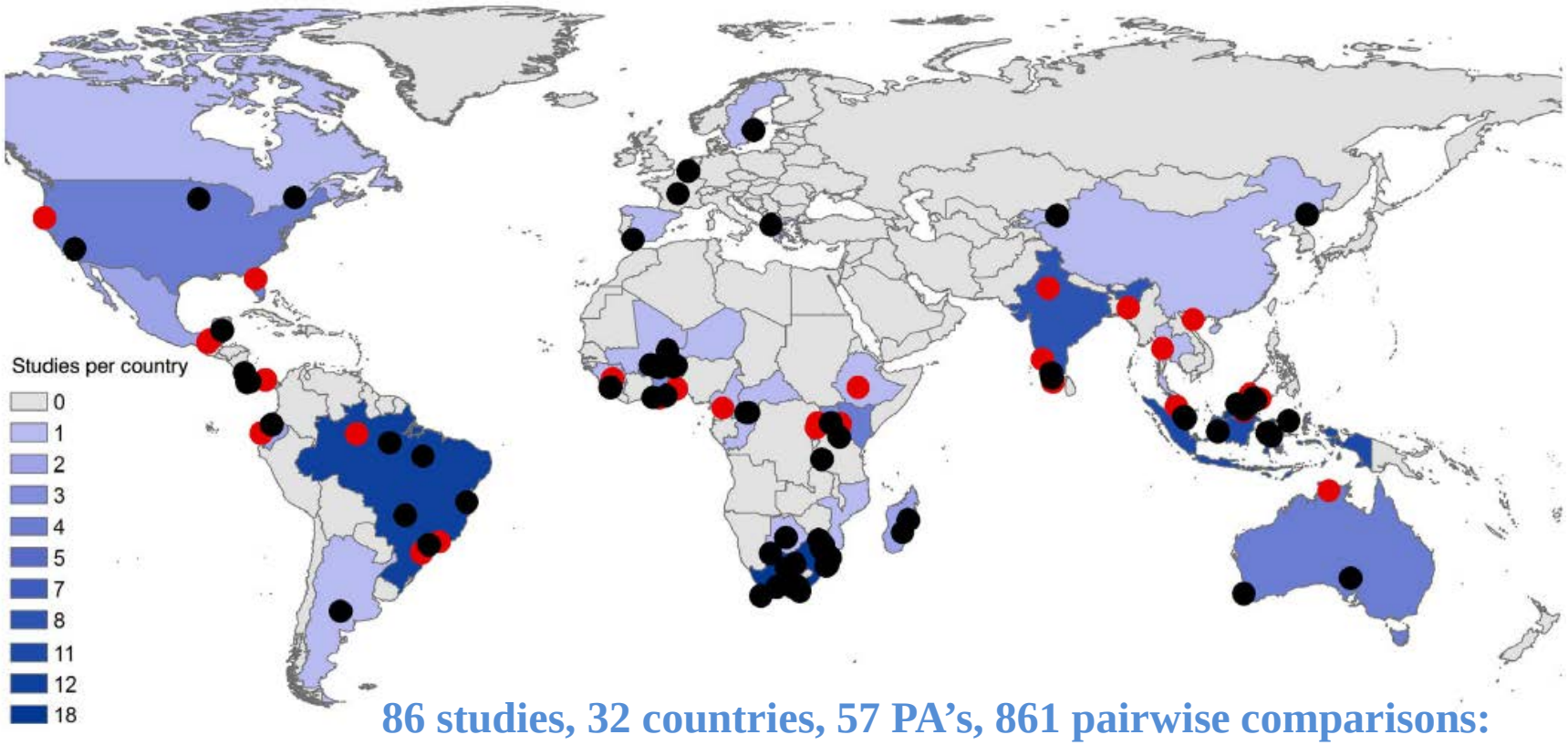


Results from trapping data over two decades supported by indigenous knowledge

Wonairski et al 2010, Wild Res
Ziembicki et al. 2013, Biol Cons

Protected areas work

"Clear signal that PA's have positive biodiversity values compared with alternative land uses"



86 studies, 32 countries, 57 PA's, 861 pairwise comparisons: mammals, birds, herptiles, arthropods and plants

Coetzee et al. 2014, PLoS One

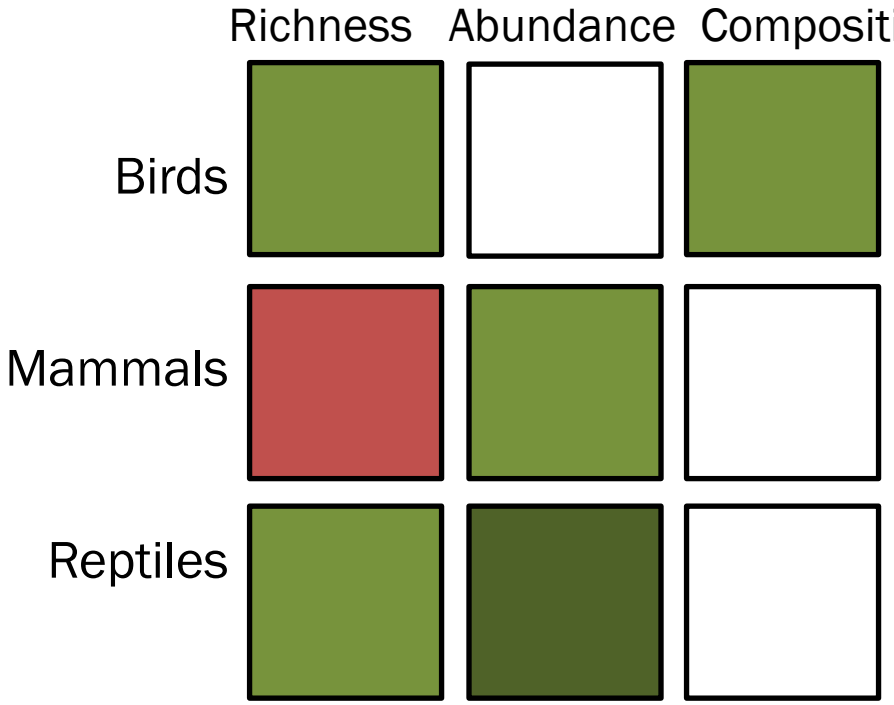
Why collect in situ data?

Just some of the reasons…

- provide the data essential for informing the type of management or policy interventions needed - tailor responses based on evidence
- draw attention to local needs for action to maintain ecological performance
- demonstrate return on investment in parks

Why collect in situ data?

Indirect measures of biodiversity such as forest cover or land-use change are not adequate surrogates for biodiversity change.



Small and variable effect of canopy vegetation on diversity in *Booderee National Park* Australia

Barton et al. 2011, Jnl Appl Ecol

Key challenges

- Cost and capacity
- Long-term investment in standardised data collection, management and reporting
- Socio-political and conservation priorities change
- Parks have a multiple goals
- Parks faced with multiple threats

Key parts of the solution

Monitoring Frameworks

Motivation for biodiversity monitoring is significantly strengthened when diverse monitoring objectives are placed within a coherent, overarching framework, such as that provided here. In

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A strategic framework for biodiversity monitoring in South African National Parks

What is a monitoring framework?

A broad vision and strategy to encompass current and guide future efforts and to align data collection with biodiversity and management goals for a park network.

McGeoch et al. 2011

Key parts of the solution

ECOLOGY

Essential Biodiversity Variables

Pereira et al. 2011

Science AAAS

Minimum set of essential measurements to capture major dimensions of biodiversity change…

- System of harmonised observations
- Minimum data set that meets multiple needs

Concept and vehicle for designing efficient data collection systems

GROUP ON EARTH OBSERVATIONS

Key parts of the solution

Citizen science and novel technologies

BowerBird

A place to share and discuss Australia's biodiversity.

Integration into *in situ* data collection activities that form part of biodiversity monitoring frameworks has enormous potential to facilitate implementation

ATLAS OF LIVING AUSTRALIA
sharing biodiversity knowledge

Summary

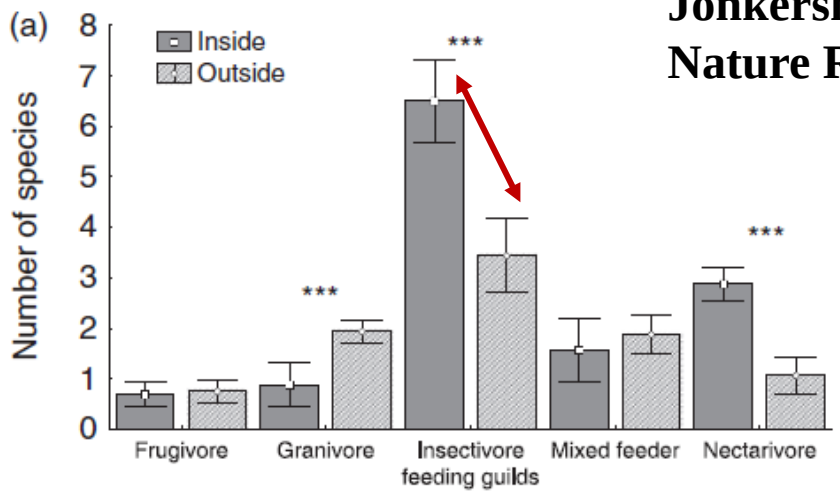
- Use **monitoring frameworks** to guide and harness the value of in situ data collection activities that are sustainable and resilient to changing priorities
- Use **Essential Biodiversity Variables** as a concept and vehicle for maximising the efficiency of in-situ data collection
- Integrate **citizen science and novel technology** as an opportunity for achieving *in situ* data collection

In situ data collection ...for monitoring biodiversity outcomes inside and outside protected areas;

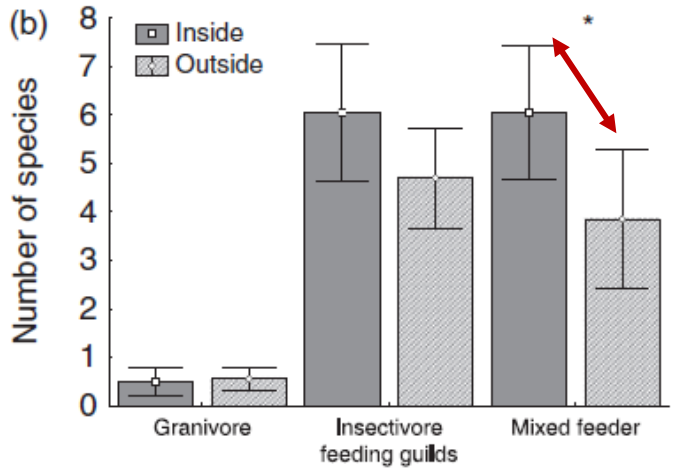
Melodie A. McGeoch

Thanks for discussion:
Bernard Coetzee, Carly Cook, Llewellyn Foxcroft, Dirk Roux, Eren Turak

Why inside and out?



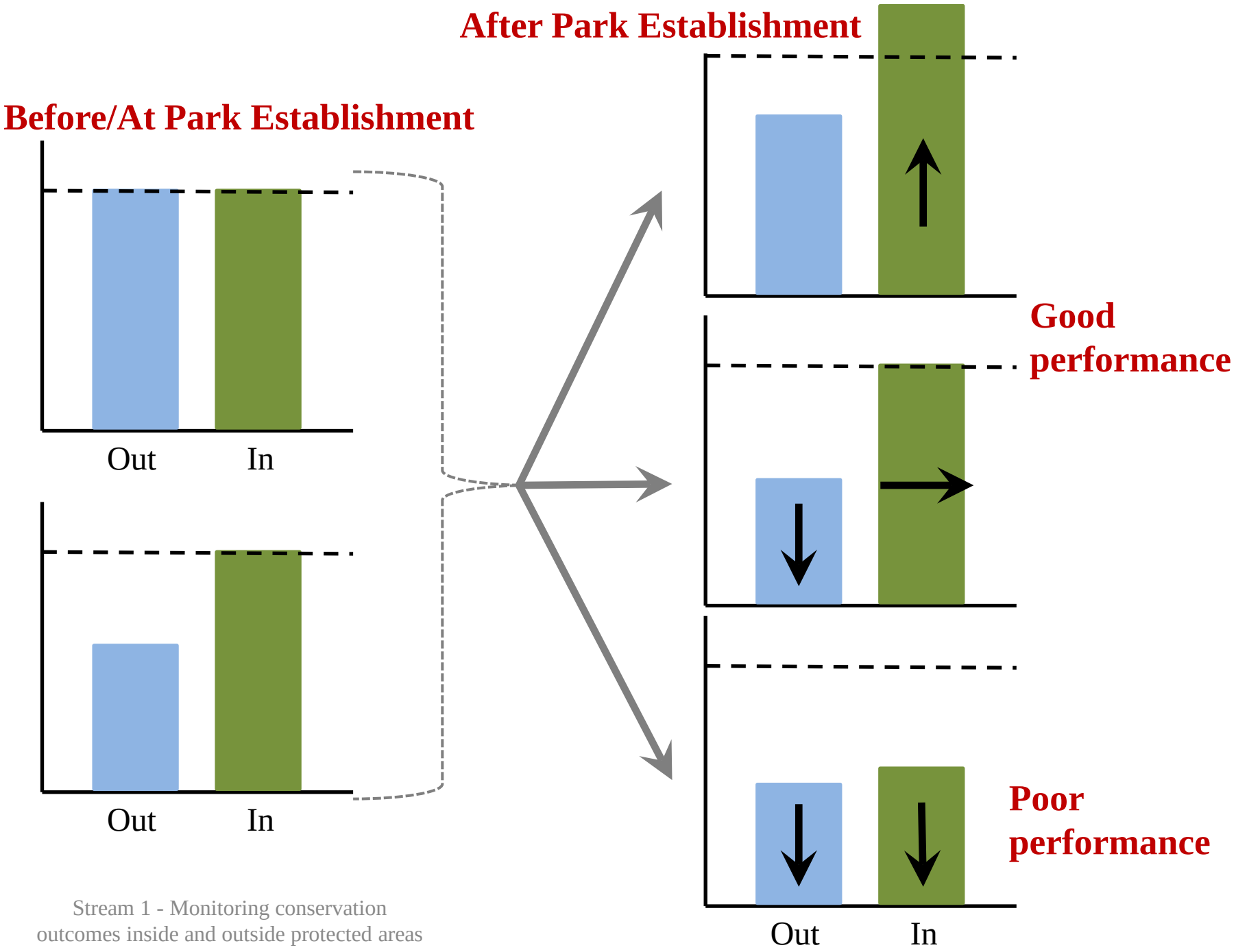
Jonkershoek Nature Reserve



Karoo National Park

Protected areas are part of the broader landscape and many of the solutions lie with managing them as such

Greve et al. 2011, Anim Cons


After Park Establishment
Before/At Park Establishment
Out
In
Out
In
Good performance
Poor performance
Out
In

Key parts of the solution

Monitoring Frameworks

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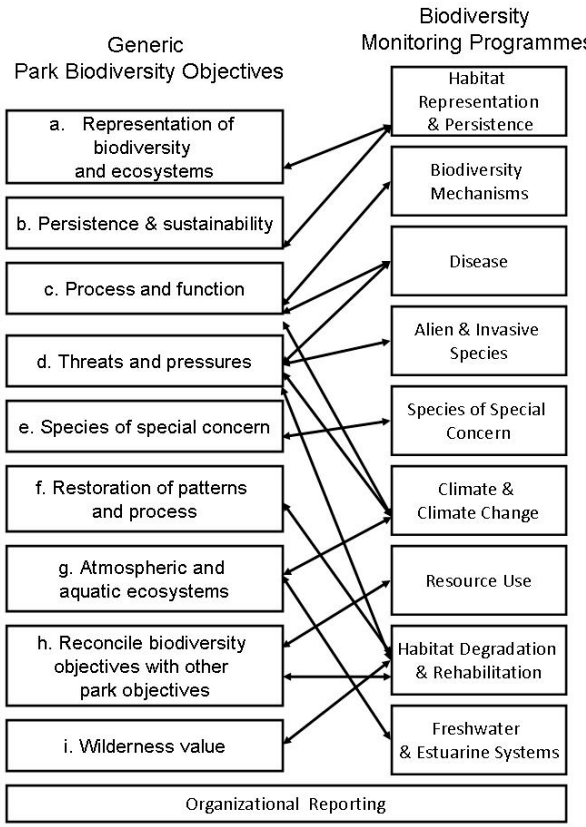

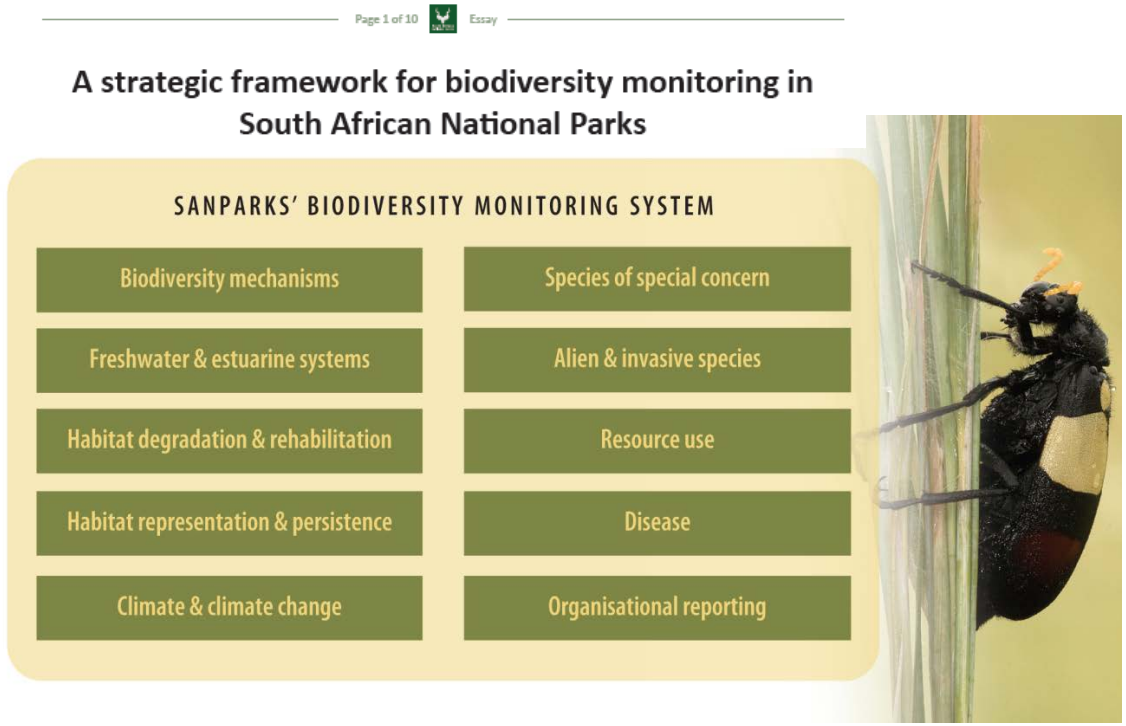

McGeoch et al. 2011