How can information lead to better conservation outcomes?

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Current tools
How can information lead to better conservation outcomes?

Current Tools

• Dashboard style
• Publishing and sharing of reference information
• Not clear how to use the information
• Link to conservation gain?
Vision for future tools
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Vision for future tools

- Focus on conservation targets
- Community-based
- Distributed content and ownership
- Use information to direct conservation action
- Don’t publish and share just because you can
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Focus on conservation targets

Simple premise:
‘If you achieve your target, you have a conservation outcome’

• User requirements analysis largely done
• Targets in policy documents
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Focus on conservation targets

- Policies
- Targets
- Indicators
- Measure progress
- Direct conservation action
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Focus on conservation targets

Policies

\[\downarrow\]

Targets

\[\downarrow\]

Information $\rightarrow$ Indicators

\[\downarrow\]

Measure progress

\[\downarrow\]

Direct conservation action
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Example: Regional target for Intact Forest Landscapes
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Example: National target for PNG (CBD Target 11)
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BIOFAMA Regional Conservation Planning Tools

CBD Target 13
By 2020, the proportion of terrestrial and inland water areas under protected management stands at least 17% (target level). A minimum of 10% should be in areas of particular importance for biodiversity and ecosystem services, and these areas should be representative of the major ecological regions of the land and inland water ecosystems involved, at the appropriate scale for the protection of representative samples of species and ecological processes.

Pro(cent) area meet target

- Pre-2020
- Post-2020
- Achieved

- Pre-2020
- Post-2020
- Achieved
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Example: Logging & coastal sedimentation (Ridge to Reef)
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Reporting

• Standardised structure for indicators
• Every indicator has a time component
• Summarise targets across time and/or space
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Biopama ACP Conservation Knowledge Centre

Report New Sector/Country summary

Proportion of Country targets met

Conservation of biological diversity

Strategy plan for ACP countries 2016-2020

Target 1: By 2020, at least 10% of terrestrial and inland water areas and 10% of marine areas, especially areas of special importance for biodiversity and ecosystem services, are protected through effectively and adequately managed, ecologically coherent, and well-connected systems of protected areas and other effective area-based conservation measures, as well as landscape and seascapes.
Pursuant to biophysical drivers and socio-economic conditions, several particular areas of particular importance for biodiversity and ecosystem services are categorized through effectively and adequately managed, appropriately representative and path-connected systems of protected areas and other areas also based on conservation measures, and that define the wider landscape and ecosystems.
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Community-based

• Conservation community:
  • Owns, prioritises and shares targets
  • Contributes and shares indicators
  • Contributes other data, images and maps (e.g. Open Street Map)

• Tools support these community roles, responsibilities and workflows
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**Indicators - Sources**

- Global analyses – Biodiversity Indicators Partnership (BIP)
- Regional analyses – SPREP (e.g. INFORM), BIP
- National scale – PICTs, BIP, specific case studies (e.g. MaCBIO)
- Local scale – management effectiveness assessments, specific case studies
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Indicators - Rocket science

• Huge increase in satellite imagery, e.g. Planet, Sentinel
• Artificial Intelligence and Computer Vision
• Big data processing, e.g. Google Earth Engine
• Global monitoring data
Planet, Paul G. Allen Philanthropies, & Leading Scientists Team Up To Map & Monitor World’s Corals In Unprecedented Detail

Andrew Zulli | June 4, 2019
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[Link](#)
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**Timeline**

- New tools developed by JRC/SPREP
- Integrated into PIPAP
- Roll-out this year
- [https://beta.biopama.org](https://beta.biopama.org)
Practical Exercise: Local-scale targets
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Rationale

• First step to achieving a target is capturing it
• We already have global, regional and national targets
• Sharing and publishing will help coordination and cooperation
• Prime the tools for BIOPAMA
• A set of common goals within the project
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Good examples

• Reduce coastal sedimentation by 50% by 2025 (*Remote sensing*)
• Eradicate rats from Rat Island by 2025 (*Global Biodiversity Information Facility*)
• Reduce illegal fishing in the MPA by 90% by 2025 (*Global Fishing Watch*)
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**Bad examples**

- Increase the number of pairs of the Samoan Moorhen from 0 to 10 by 2020
Bad examples

• Increase the number of pairs of the Samoan Moorhen from 0 to 10 by 2020

Not achievable
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Bad examples

• Increase mammal happiness by 50%
Bad examples

• Increase mammal happiness by 50%

Not measurable
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Bad examples

• Anything with the word ‘fund’ in it
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3+ priority local-scale targets:

- Country
- Protected or conservation area name
- Target

https://biopama.org/node/254

Google Sheet at bottom: ‘Local-scale targets for Pacific Countries’
Pacific Conservation Todo List

- Complete
  - Graduation rate from fish schools
  - Education - number of sites
- Recruit the voices of communities in a protected area
  - Reduce sedimentation from logging and river banks
  - Education - sediment load
- Present coping strategies to reduce deforestation
  - Increase the number of protected areas of Seamounts in the Pacific by 2025
  - Education - number of protected areas
Pacific Conservation Todo List

- Complete
  - Gradual increase in fish species
  - Restoration - number of sites
  - Reintroduce food of endangered wild lots of wildlife
- Secure tenure rights for communities in a protected area
- Reduce sedimentation from logging and land use
- Reduce pollution from logging and land use
- Prevent algal blooms to reduce off-formal target
- Increase the number of sites of Souna Souna from 0 to 50 by 2030

Why stop here?
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Other uses of information

- Information can also be used for conservation outcome in:
  - Measuring progress against targets (response)
  - Assessing biodiversity value (state)
  - Assessing threats (pressure)
  - Assessing costs
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Example: Systematic conservation planning
Decision-support for conservation

Jennifer McGowan
The ARC Centre of Excellence for Environmental Decisions, UQ
The Nature Conservancy
(starting July 1 2018)
What is decision-science?

• The study of how people make decisions
• Developing approaches and tools to help people make better decisions

We are all making decisions all the time
• Should I bring my umbrella today?
• Where should I live?
• Should I eat another muffin at the afternoon tea break?

Objectives, actions (costs and feasibility), risks and uncertainty
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“Life” is just six things ... and 31 one words

• What do you want?
• What can you do?
• How do things you can do change what you want?
• Choose from things you can do to get what you want
• Do
• Learn

- Prof Hugh Possingham
  Chief Scientist
  The Nature Conservancy
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What is spatial prioritization?

- The efficient allocation of resources to prioritise actions in space and time

**Optimize poaching patrols**

**Do I manage now or monitor?**

**Allocate funding to different Pas/MPAs**

**Prioritizing across threatened species projects**

**Prioritize protected areas**

**Do I collect more data, or just start managing?**

**Optimize invasive species management**

**Multi-objective planning**

Integrated Land-sea management and planning for the future
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• Review of post 2010 NBSAPs for 140 countries
  • 30% no maps at all (eeks!)
  • 3% included planning maps with priority PAs identified
  • 2% included maps with biodiversity and Pas overlays
  • 1% included maps related to socio-economic services

Representation: a fundamental concept that aims to ensure a sample of all biodiversity is protected (species, habitats, ecological processes, cultural sites, etc)
Australia has reached its Aichi target 11 (in terms of %) but it is an unrepresentative network of MPAs.

What are the biodiversity gains of a network that is not representative of biodiversity?
A Toy Problem for Representation:
pick 2 sites to protect

Hotspots approach: species richness
Hotspot approach: species richness
Hotspot approach: species richness
Scoring and adding (expert elicitation)
Scoring and adding (expert elicitation)
Criteria-based:
Sea turtles
AND
(presence of two or more corals, or seagrass or mangroves
Criteria-based: Sea turtles AND (presence of two or more corals, or seagrass or mangroves)

KBA/IBA: Criteria E---to complement the identification of these sites with systematic spatial planning
Target-based approaches:
Represent all species at least once
Target-based approaches:

Represent all species at least once

Objective: Meet representation and impact as few people as possible
But what have we not considered?
Why decision-support tools can be useful

• Help us find good answers to really complex challenges
• Standardize the evaluation of benefits and impacts to stakeholders
• They create a transparent and repeatable decision-making process
• They can provide you with a strategic plan – which is the starting point
• Be used on multiple scales, different types of actions and data
• Network scale versus site-by-site planning (Aichi target 11)
• Make iterative planning and assessment easy!
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From Knowledge to Action for a Protected Planet
Common concerns

- Too complicated
- Too time consuming
- Don’t trust the results
- Black box (e.g. modeling)
- Too top-down
- Not flexible enough
- Not enough capacity
- Not enough data to get started

Decision-support tool, not the decision maker!!

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From Knowledge to Action for a Protected Planet
From Marxan to management: ocean zoning with stakeholders for Tun Mustapha Park in Sabah, Malaysia

Rebecca Jumin, Augustine Binson, Jennifer McGowan, Sikula Magupin Maria Beger, Christopher J. Brown, Hugh P. Possingham and Carissa Klein
Steps for the future:

• Integrated decision-support with BIOPAMA regional observatories

Questions??
THANK YOU!
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