AN APPROACH TO MAXIMISING SOCIOECOLOGICAL BENEFITS

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MPA STORY - ESTABLISHED ROLES OF MPA

• Safe guard the environment for future generations
• Protect marine and coastal habitats
• Protect key species, nursery and spawning grounds for recruitment
• Support resource recovery
• Provides opportunity for recreation
Mixed feelings have been expressed on the role of MPAs on biodiversity, conservation and fisheries management. (Sunde and Isaacs 2008)

Their establishment in South Africa has been focused on biodiversity and fisheries data.

Lack of benefit sharing (Watts and Fassen 2009)
MPA STORY - OPERATION PHAKISA

A cross-sector initiative with the main aim of unlocking the ocean economy to promote industrialisation and job creation.

Expansion of Marine Protected Area network
MPA STORY – SA, WHERE ARE WE?

Falling national and international targets
10% protection by 2020 of representative network

Current MPA design in SA not supported

Opportunity through Operation Phakisa

0.42% → 0.5% → 10%
Assess marine ecosystem protection levels and identify new priority areas for Marine Protected Area expansion by optimizing benefits.
a. Identify conservation gaps
   *Ecosystem Type Map*
   *Ecologically and Biologically Significant Areas*

b. Identify features for potential benefits
MPAS AS GAZETTED FOR PUBLIC COMMENT
## TOOLS - CATEGORIES OF NON-CONSUMPTIVE BENEFITS

1. Economic
2. Biodiversity
3. Meeting Conservation Targets
4. Fisheries Sustainability
5. Heritage
6. Climate change Resilience
## DATA LAYERS

<table>
<thead>
<tr>
<th>No.</th>
<th>Status</th>
<th>Category</th>
<th>Layer</th>
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<tbody>
<tr>
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<td>Social</td>
<td>Blue Flag Beaches</td>
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<tr>
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<td>Social</td>
<td>Caves, Middens and Waterfalls</td>
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<td>Ceremonial and Sacred Sites</td>
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<td>Climate Resilience</td>
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<td>Diving sites</td>
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<td>Social</td>
<td>Shipwrecks</td>
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</table>
SYSTEMATIC CONSERVATION PLANNING — IDENTIFYING THE NEXT 5%

MARXAN Analysis

Algorithm which is able to identify the most suitable areas that will meet limits set at the least cost.

Freely available

Can be used on R
ACKNOWLEDGEMENTS
1. The total cost of the solution
2. The penalty for not adequately meeting quantitative targets
3. The total solution boundary length, multiplied by a modifier
4. The penalty for exceeding a preset cost threshold

**Systematic offshore biodiversity planning**

1. Spatial management options
2. Selection frequency

**Tables of data**
- Each PU now has data for biodiversity & activities
- Set targets for spatial management
- Define design principles
- Make a cost map from all activities

**Maps of activities**
- Define scenarios (i.e. mathematical problems) with targets and cost maps

Use Marxan to solve the maths problem
Marxan gives two main types of results

**Marxan**

(Possingham et al. 2000, Game & Grantham 2008)