Fighting on arrival and fighting for survival

Nibedita Mukherjee
Nabiul Islam Khan
Uta Berger
Nico Koedam
Farid Dahdouh-Guebas
Facts and figures

Global distribution of mangroves- Giri et al., 2010

- 67 plant species, 123 countries
- 0.1% of continental surface
- 11% of input of terrestrial carbon
One world

Tamil Nadu

Florida
The road to....

Sri Lanka

Florida
The questions

Ranking of the global impacts

- Scale
- Intensity
Scientific approach

• Ask the experts
  – Delphi technique

• Modelling using KIWI
Delphi on mangroves
Step wise process

Choose 1 country

Is natural regeneration possible?
Yes
Time needed?
No
Human induced restoration?
Yes
Time needed?
No
Free web based tools
## Results

<table>
<thead>
<tr>
<th>Name of country</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>4</td>
</tr>
<tr>
<td>India</td>
<td>3</td>
</tr>
<tr>
<td>Brazil</td>
<td>2</td>
</tr>
<tr>
<td>South Africa</td>
<td>2</td>
</tr>
<tr>
<td>Mexico</td>
<td>2</td>
</tr>
<tr>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1</td>
</tr>
<tr>
<td>Kenya</td>
<td>1</td>
</tr>
<tr>
<td>Kiribati</td>
<td>1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1</td>
</tr>
</tbody>
</table>
Spatial scale of threats

Degradation for development: 73%
Tourism: 57%
Degradation for household uses: 56%
Aquaculture: 54%
Natural disasters: 51%
Climate change: 45%
Oil spills: 43%
Pest infestation and diseases: 42%
Extractive processes: 36%
War related destruction: 20%
## Intensity of threats

<table>
<thead>
<tr>
<th>Threat</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degradation for development</td>
<td>74</td>
</tr>
<tr>
<td>Tourism</td>
<td>59</td>
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<tr>
<td>Aquaculture</td>
<td>56</td>
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<tr>
<td>Natural disasters</td>
<td>53</td>
</tr>
<tr>
<td>Climate change</td>
<td>49</td>
</tr>
<tr>
<td>Degradation for household</td>
<td>48</td>
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<tr>
<td>Oil spills</td>
<td>44</td>
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<tr>
<td>Pest infestation and...</td>
<td>40</td>
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<tr>
<td>Extractive processes</td>
<td>37</td>
</tr>
<tr>
<td>War related destruction</td>
<td>20</td>
</tr>
</tbody>
</table>

[Image of a desert landscape]
To be or not to be...

Natural restoration?

No. of responses

Yes: 7
No: 7

Human induced restoration?

No. of responses

Yes: 13
No: 1
Natural restoration

Degradation for development: 8
War related destruction: 6
Aquaculture: 6
Degradation for household: 6
Natural disasters: 6
Extractive processes: 4
Tourism: 4
Climate change: 2
Oil spills: 0
Pest infestation and diseases: 0
Human induced restoration

- Degradation for development: 8
- Degradation for household uses: 6
- Extractive processes: 4
- Aquaculture: 4
- Climate change: 2
- War related destruction: 2
- Oil spills: 2
- Natural disasters: 2
- Pest infestation and diseases: 0
- Tourism: 0
What if....

Biomass = 300—400t/ha
Max height = 50m
Recruitment = 390/ha (Putz and Chan, 1986)
Back to normal

1 Development
2 Tourism
3 Pests
4 Extractive processes
5 Climate change

Biomass (t/ha)

Time (years)
Recovery times

1 Development
2 Tourism
3 Pests
4 Extractive processes
5 Climate change

Time (years)

Impacts

18
Conclusion

(Retrogressive) Development?

Recovery times relatively fast

Time to rethink
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