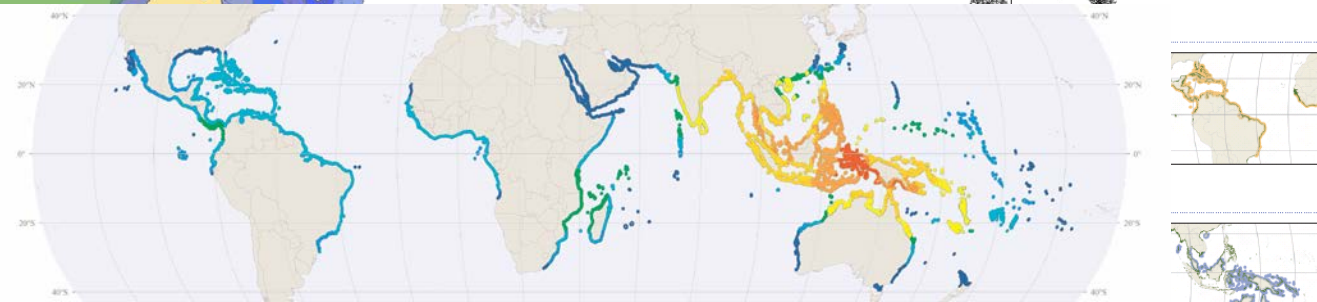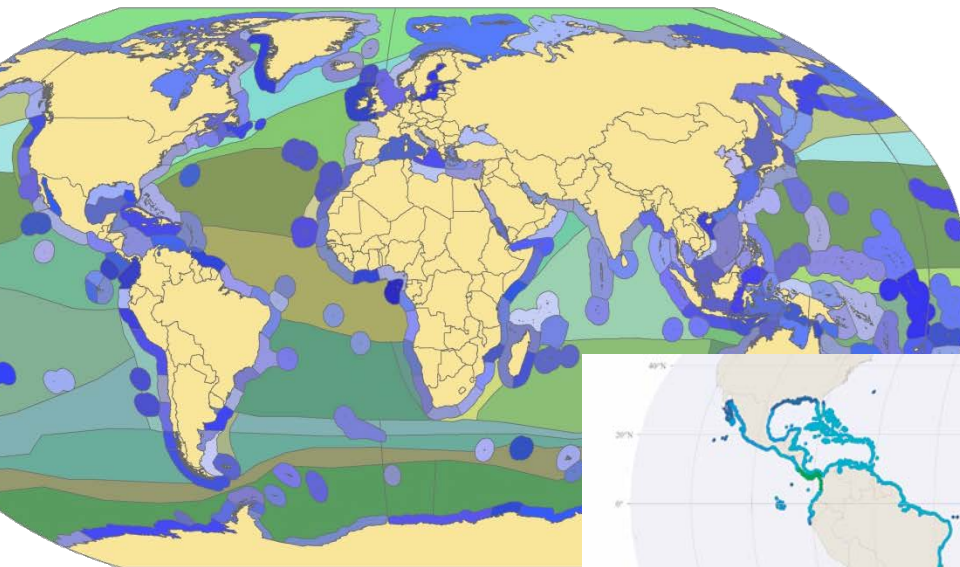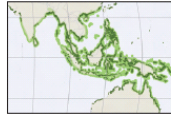# Future scenarios, marine Biodiversity:
current status and global gaps,
current trends and global needs

Mark Spalding

UNIVERSITY OF CAMBRIDGE

The Nature Conservancy
Protecting nature. Preserving life.™
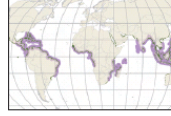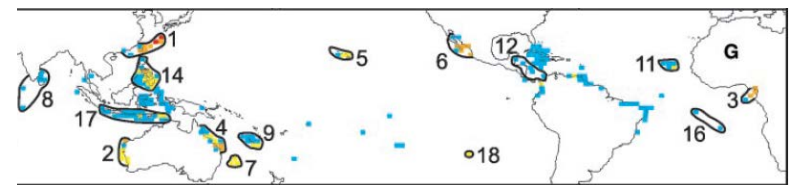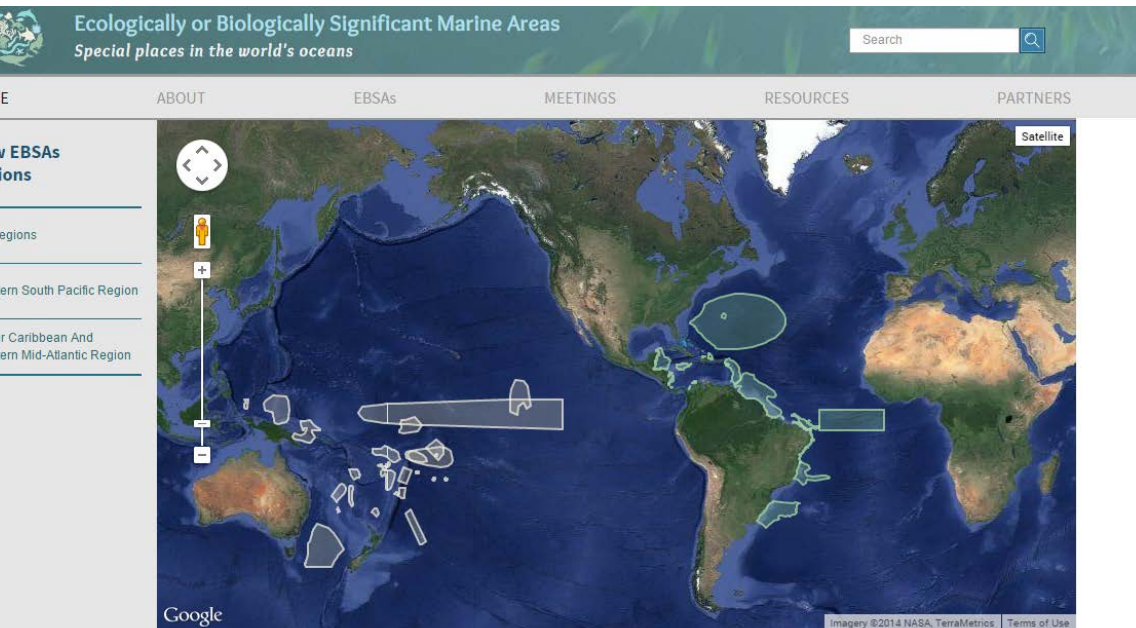
Acanthus ilicifolius
Acanthaceae
shrub or herb, leaf slightly lobed with serrated margin, flower light blue or violet

Acrostichum aureum
Pteridaceae
fern, pinnae reddish when young and with blunt tips

Aegialitis annulata
Plumbaginaceae
shrub, flower white, leaf dull above

Ecologically or Biologically Significant Marine Areas
Special places in the world's oceans

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ern South Pacific Region

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Satellite

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Current status and global gaps

- 13% countries/territories meet <u>spatial</u> target for marine coverage

- 32% marine ecoregions meet target levels of coverage

- 0.2% of high seas covered

- 5% pelagic provinces meet target levels of coverage
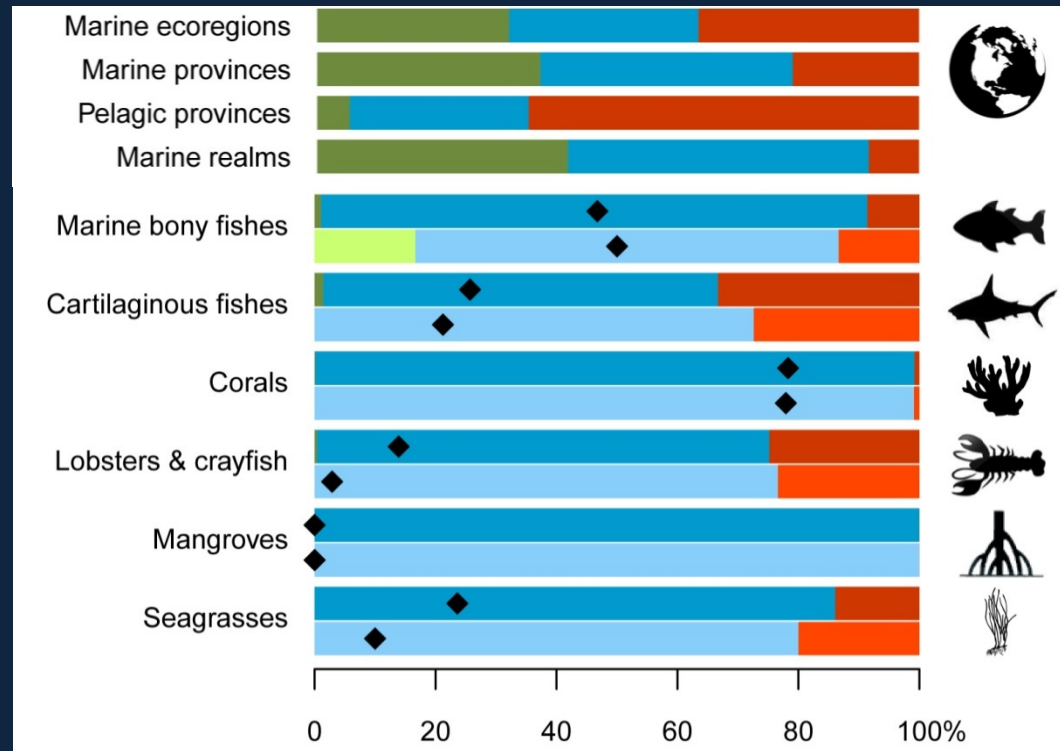
Red = no PA coverage
Blue = partial PA coverage
Green = complete coverage

Diamonds = % species with target levels of coverage
Upper bars = all spp
*Lower bars = threatened species*

Butchart, Clarke, Smith, Sykes, Scharlemann, Harfoot, Buchanan, Angulo, Balmford, Bertzky, Brooks, Carpenter, Comeros, Cornell, Dulvy, Ficetola, Fishpool, Harwell, Hilton-Taylor, Hoffmann, Joolia, Joppa, Kingston, May, Milam, Polidoro, Ralph, Richman, Rondinini, Skolnik, Spalding, Stuart, Symes, Taylor, Visconti, Watson, and Burgess, in rev, <u>Shortfalls and solutions for meeting national and global conservation area targets</u>.

Current trends

PA coverage has increased since 1990 by:

92% for terrestrial
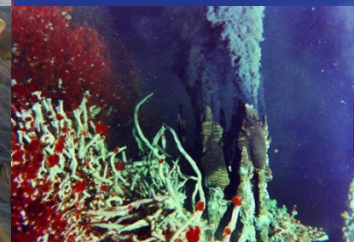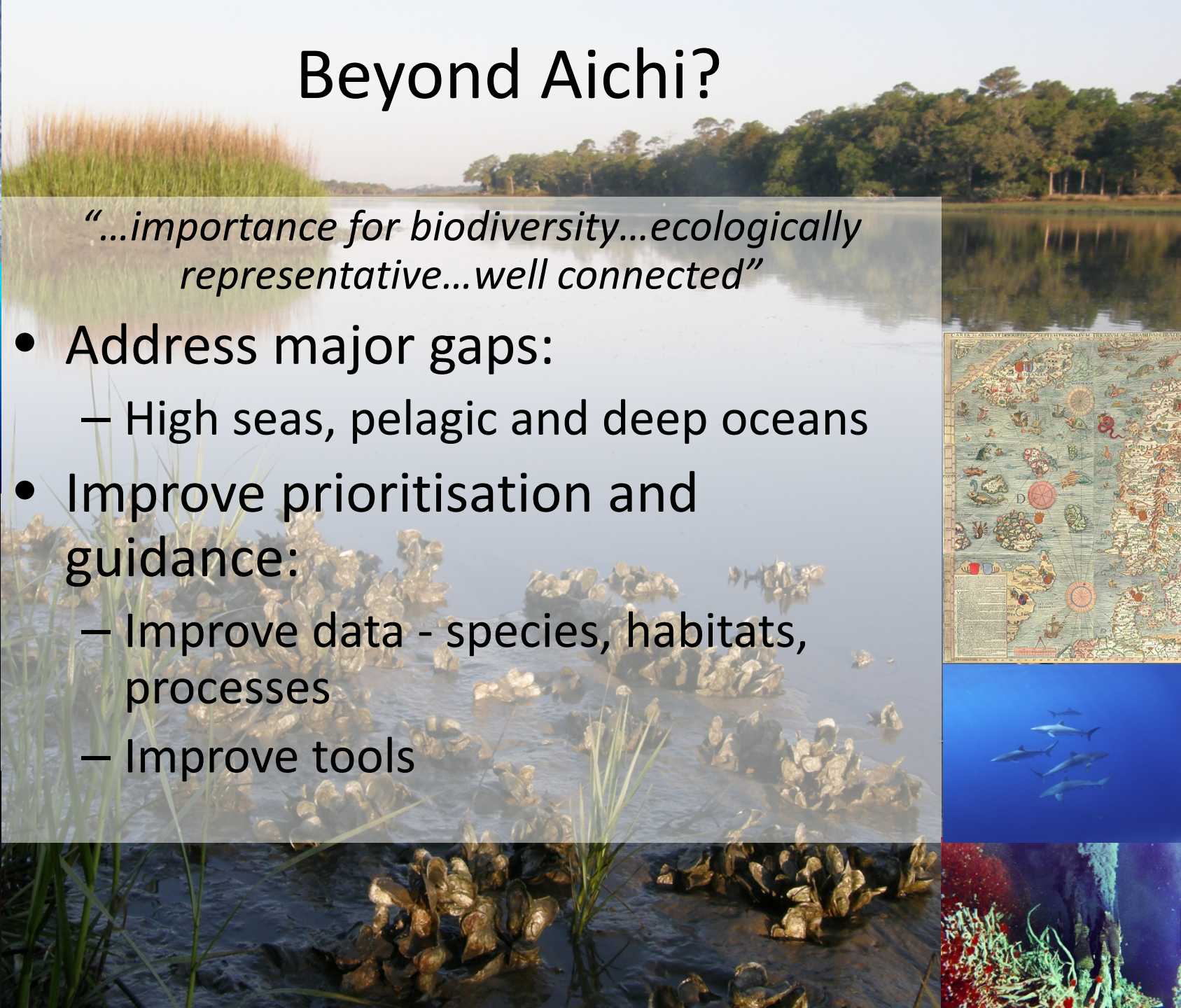513% for marine environments
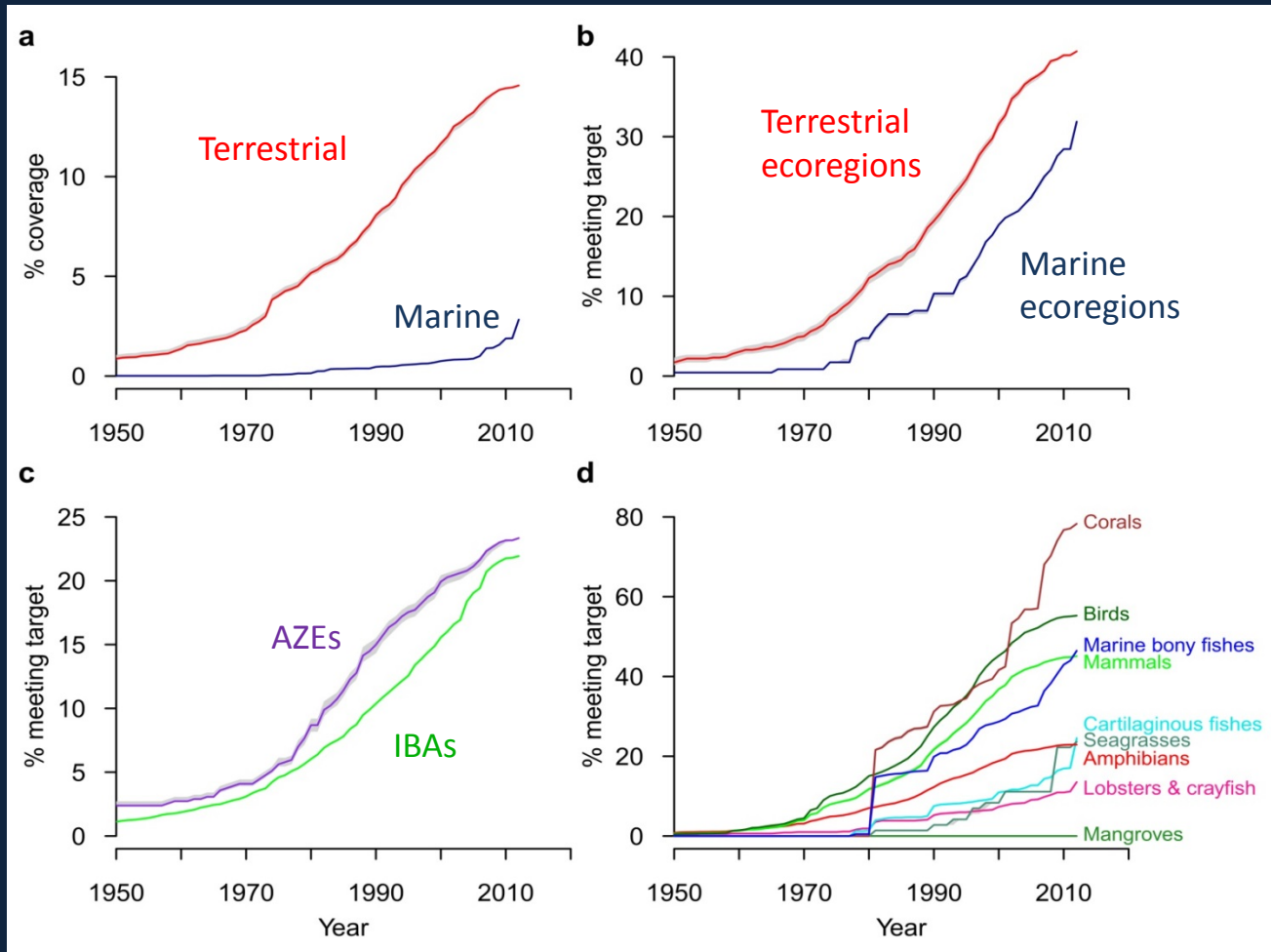
Beyond Aichi?

"…importance for biodiversity…ecologically representative…well connected"

- Address major gaps:
  - High seas, pelagic and deep oceans
- Improve prioritisation and guidance:
  - Improve data - species, habitats, processes
  - Improve tools

"effective…other effective area-based conservation measures… integrated into wider seascapes"

- Define, "other measures" and support them
  - Effective fisheries management interventions

- Address "effectiveness". Sites should only be counted if they deliver ecological protection.
  - Place for special recognition of no-take

- Address the places beyond targets (currently the other 90%)
  - Marine spatial planning, ocean zoning

- Interim goals for 2030
  - 5% no-take
  - 25% traditional MPAs
  - 50% of ocean zoned and managed sustainably

- Aspirational longer-term goals
  - 20-30% no-take
  - 100% sustainably managed

Future scenarios:
Ecosystem Services

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Two conservations?

- Nature
- Forests, wetlands, rivers
- Biodiversity and habitats

- Ecological processes

- Natural capital
- Green infrastructure
- Asset classes in an ecosystems market

- Ecosystem services
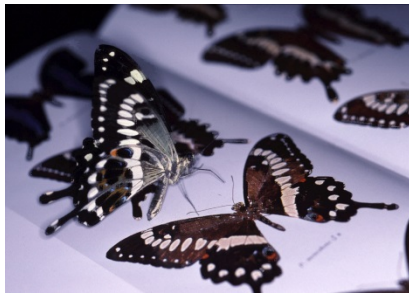
A long tradition:

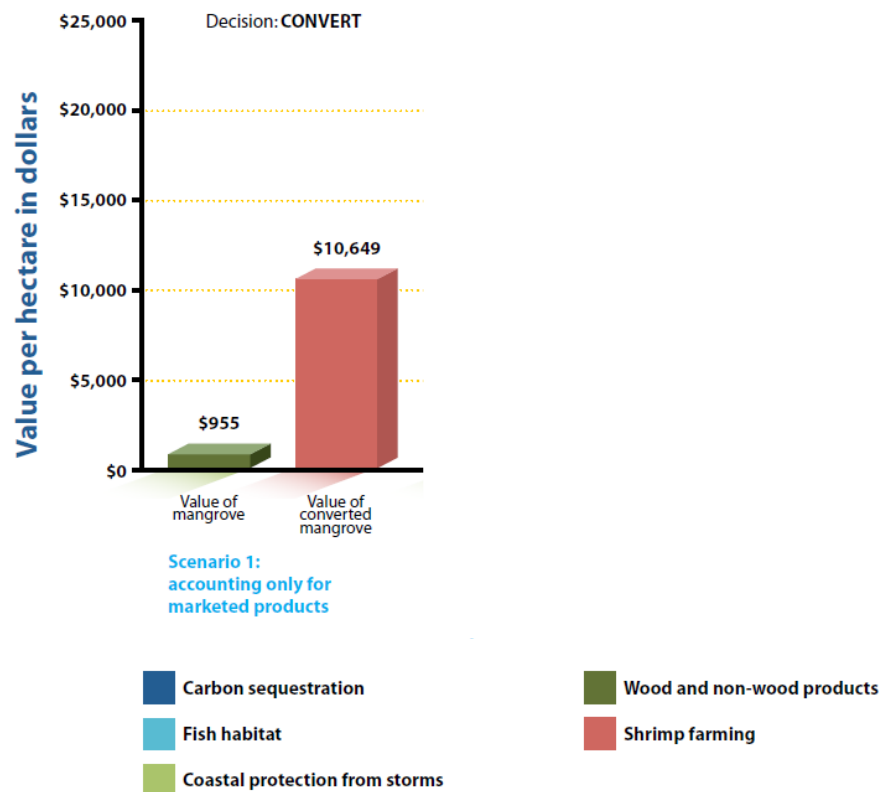Ecosystem services and protected areas have a long history

"a public park or pleasuring ground for the benefit and enjoyment of the people"

Daniel Mayer, Wikipedia
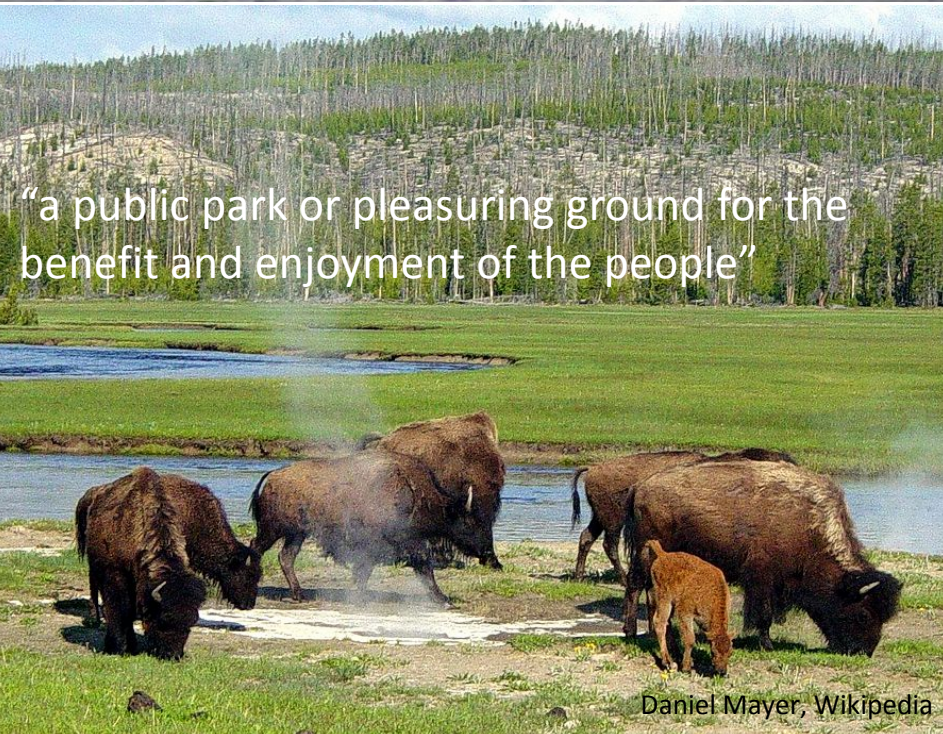
A strong comittment: Aichi T11

"...areas of particular importance for biodiversity <mark>and ecosystem services</mark>..."

A powerful incentive

Mangroves in Thailand - convert or conserve?

Value per hectare in dollars

Decision: **CONVERT**

$10,649 — Value of converted mangrove

$955 — Value of mangrove

Scenario 1: accounting only for marketed products

- Carbon sequestration
- Fish habitat
- Coastal protection from storms
- Wood and non-wood products
- Shrimp farming

A powerful incentive

Mangrove Capital partnership

…and a disconnect?

Saatchi et al, 2011, White et al., 2012, InVEST, coastalresilience.org…

Ecosystem Services in MPAs

Spalding et al, 2013

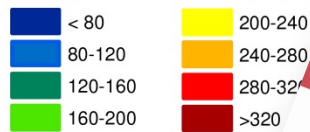# Modelling mangrove aboveground biomass

Hutchison et al, 2013
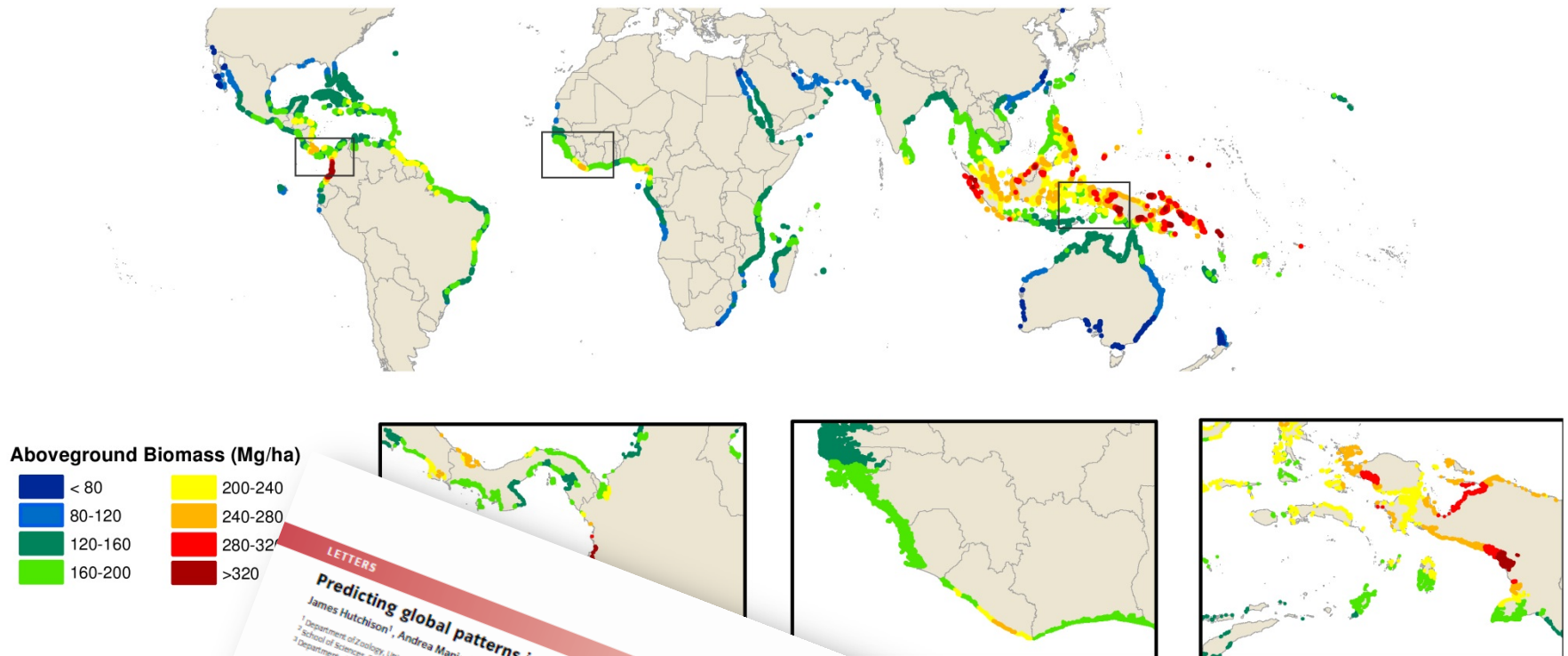
How well are ecosystem services covered by MPAs?

Carbon (above-ground biomass)
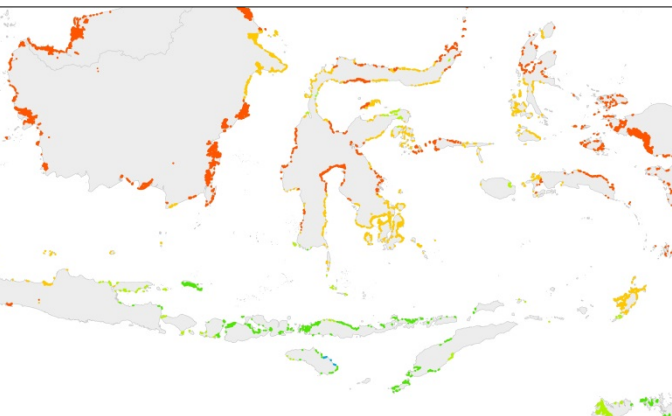
Coastal protection

Mangrove fisheries

Reef fisheries

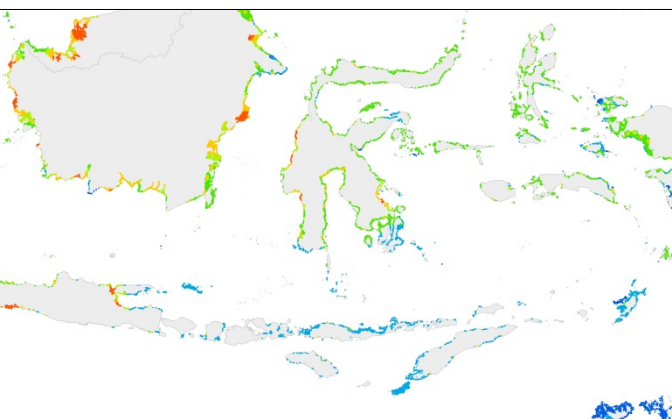Tourism

CambridgeConservationInitiative

WORLD RESOURCES INSTITUTE

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BirdLife INTERNATIONAL

UNEP WCMC

The Nature Conservancy
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Mangroves

Coral reefs

Carbon (above-ground biomass)

Coastal protection

Mangrove fisheries

Reef fisheries

Tourism

Zero   Low → medium → high
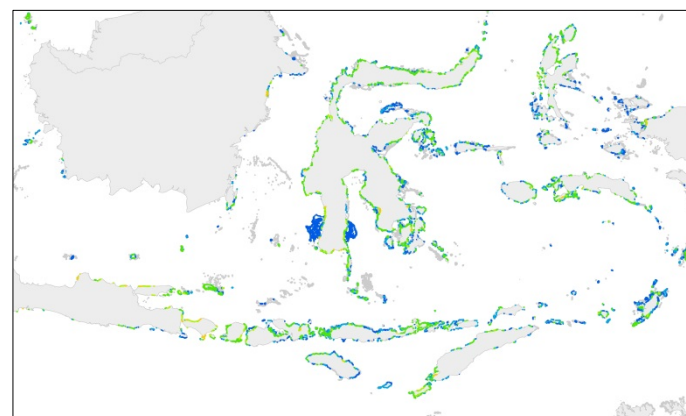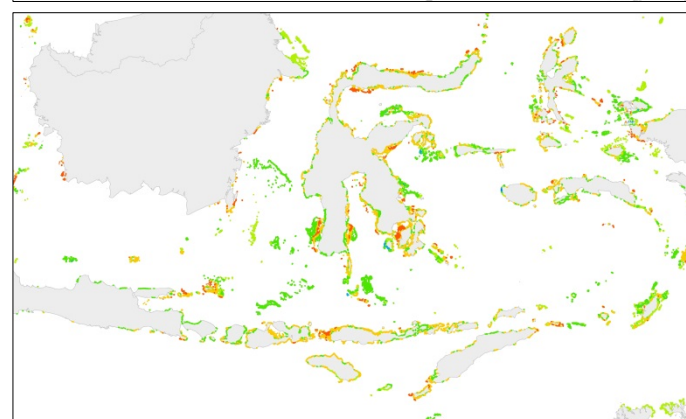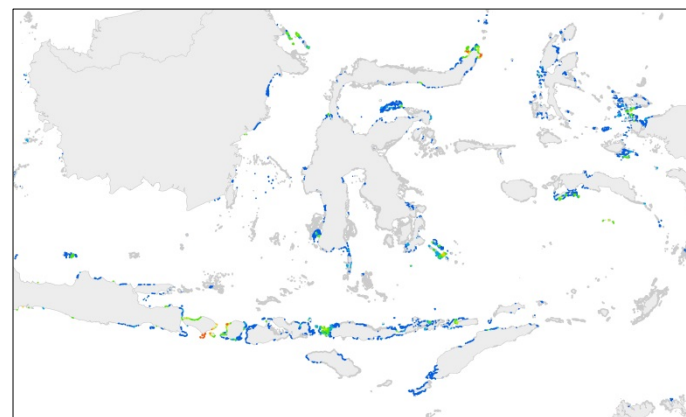
Coral reef MPAs

- 32% of world's reefs are in MPAs
- 17% of coastal protection value in MPAs
- 36% of tourism value
  - Malaysia – 6% of reefs, 16% of tourism value
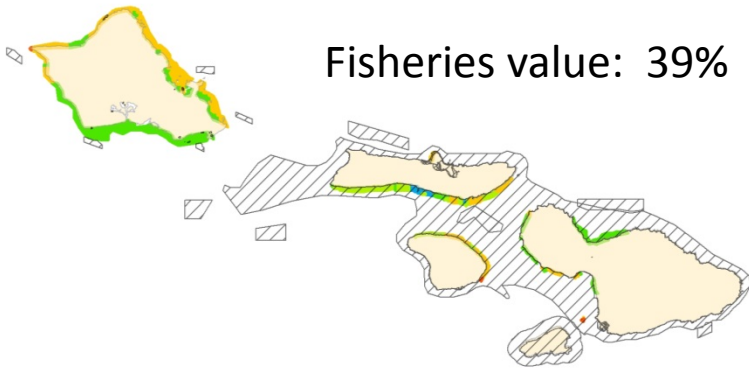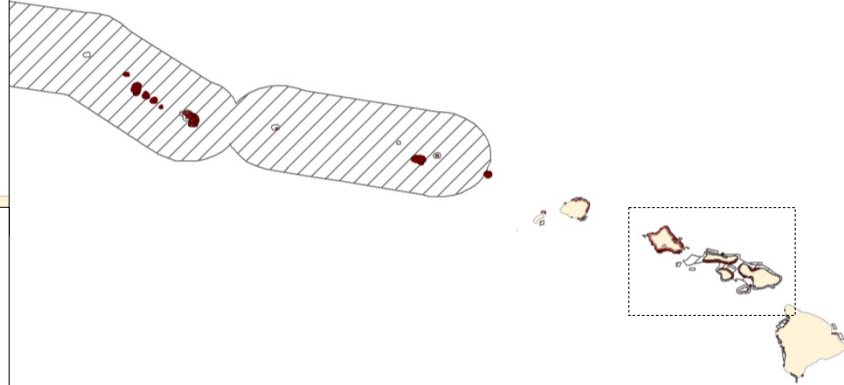 - Indian Ocean – 27% of reefs, 11% of tourism value
- 27% of fisheries value
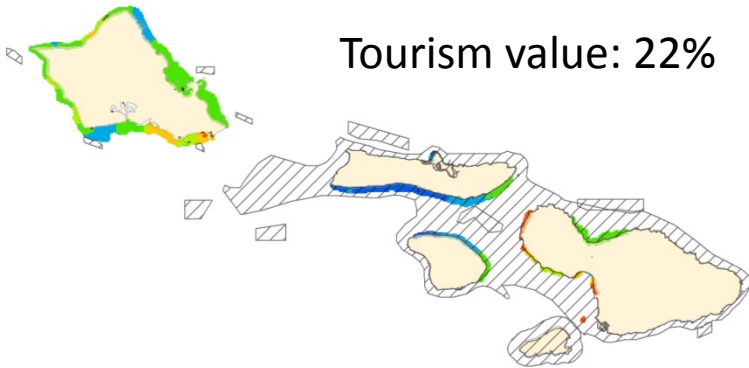 - No-take contributed 2% of MPA related fish catch, rising to over 10% in Kenya and Bermuda
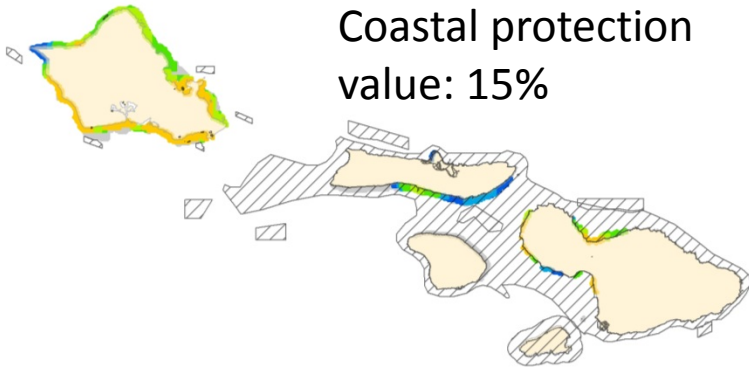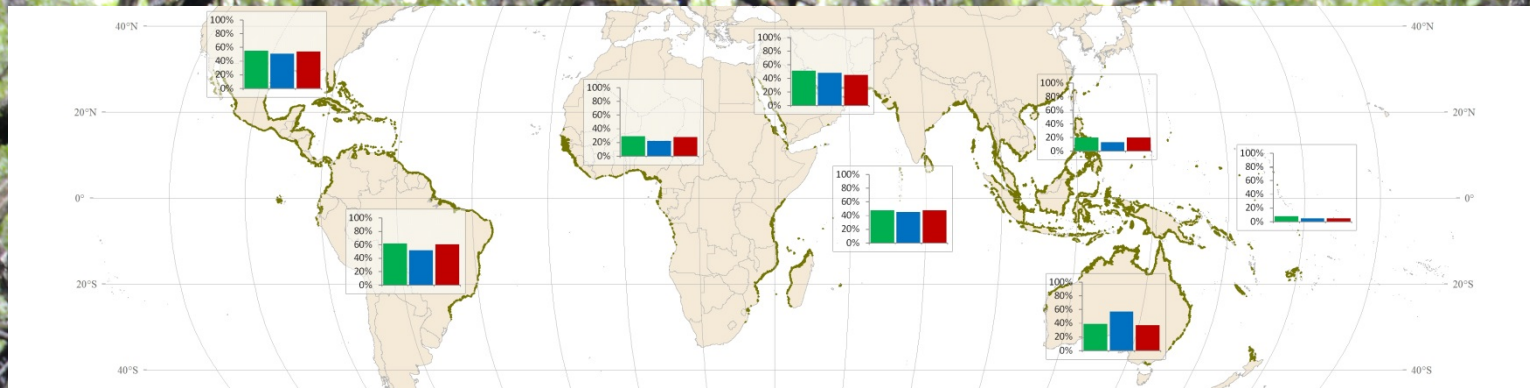
Fisheries value: 39%

Tourism value: 22%

Coastal protection value: 15%

Hawaii's coral reefs: 88% in MPAs

1315 Amphitheatre:

Location, location, location: are we putting MPAs in the right places

1530 Ocean+ Pavillion

How can we build ES into wider MPA prioritisation

www.nature.org/oceanwealth

Attaining Aichi Target 11:
How well are marine ecosystem services covered by protected areas?

The Nature Conservancy · UNIVERSITY OF CAMBRIDGE · UNEP WCMC

Discussion Paper prepared for the World Parks Congress, Sydney, November 2014

Mark Spalding[1], Lauretta Burke[2], James Hutchison[3], Philine zu Ermgassen[3], Hannah Thomas[4], Joscelyne Ashpole[4,5], Andrew Balmford[3], Stuart Butchart[5], Anna McIvor[1], Chris McOwen[4,5], Brian McSharry[4], Jenny Merriman[5] and Thomas Spencer[6].

[1] The Nature Conservancy
[2] World Resources Institute
[3] Department of Zoology, University of Cambridge
[4] United Nations Environment Programme World Conservation Monitoring Centre
[5] Birdlife International
[6] Department of Geography, University of Cambridge

Beyond Aichi?
Recommendations

- We're all talking about it:
  - LMMA, DRR, Tourism, Industry, REDD+
- Definition and delineation
  - Need tools to quantify and map
  - Metrics – not just monetary
  - Focus – regulating, provisioning?
- Prioritisation:
  - Areas of Critical Importance for Ecosystem Services
- Act fast. We need this well before 2020!
  "Nature needs half" or:

  Humans need nature

Thank you

MAPPING OCEAN WEALTH
www.nature.org/OceanWealth