Valuing natural capital: from science to real decisions

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Outline of the talk

- Connecting marine ecosystem services with people

- Developing approaches and tools

- Successful examples of cooperation

- Cross-cutting lessons

Relevance of ecosystem services for people

- The oceans, from the coasts to the deep sea, support extremely rich and diverse ecosystems in terms of ecosystem services
  - Food provision
  - Carbon sequestration
  - Recreation
  - Aesthetics
- Investigating these social-ecological links is fundamental to understand the human dependence on marine ecosystems

Marine ecosystems provide the highest economic benefits for humans

De Groot, R. et al. (2012) Ecosystem Services 1: 50-61.
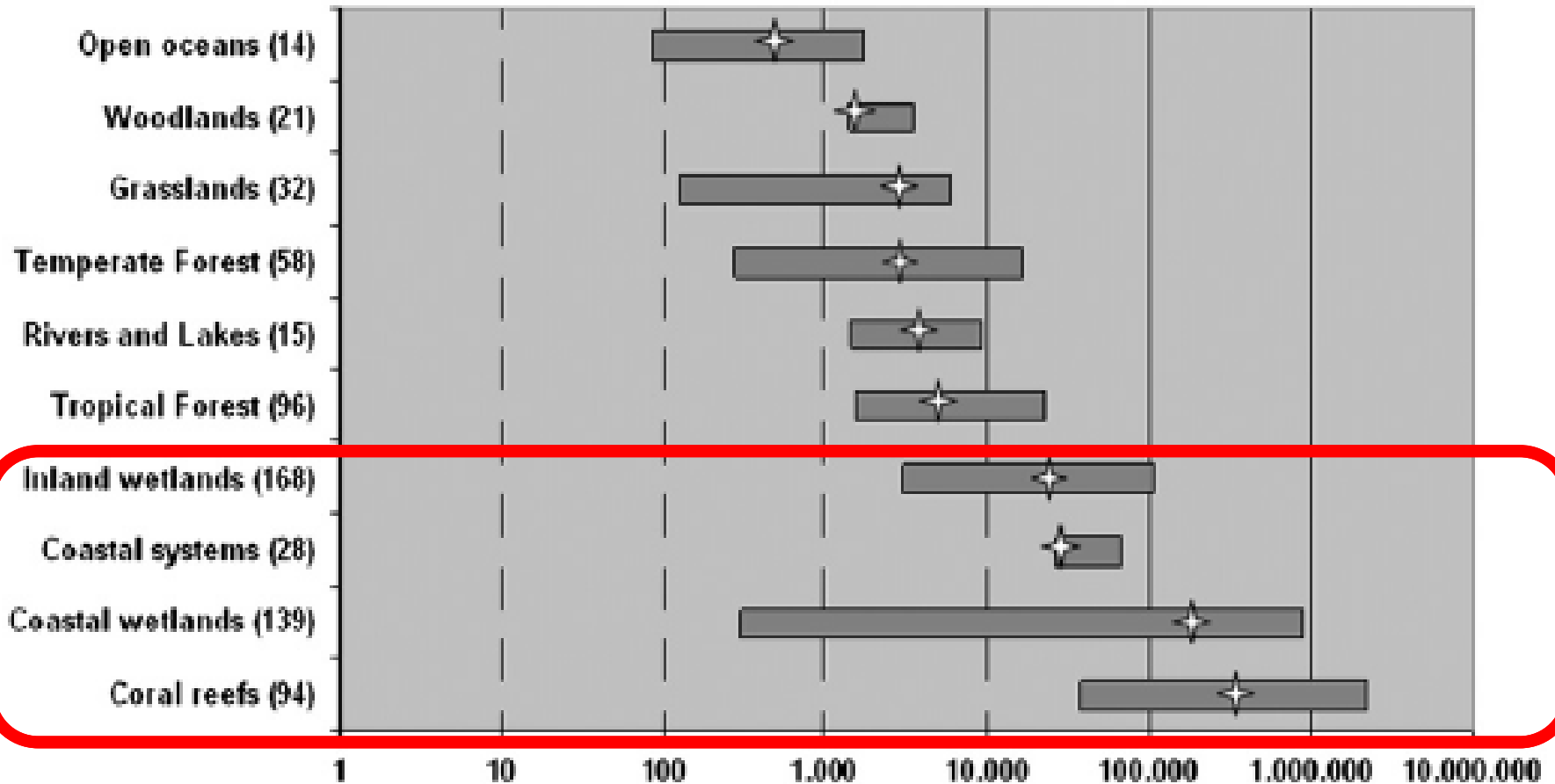
...But they experience an economic loss of $10.9 trillions/year

Biome	Area (e6ha)		Aggregate global flow value (trillions 2007$/yr)	
	1997	2011	1997	2011
Marine	**36,202**	**36,202**	**60.5**	**49.7**
Open ocean	33,2	33,2	21.9	21.9
Coastal	*3,102*	*3,102*	*38.6*	*27.7*
Estuaries	*180*	*180*	*5.2*	*5.2*
Seagreass/algae beds	*200*	*234*	*5.8*	*6.8*
Coral reefs	*62*	*28*	*21.7*	*9.9*
Shelf	2,66	2,66	5.9	5.9
Terrestrial	**15,323**	**15,323**	**84.5**	**75.1**
World	**51,625**	**51,625**	**145.0**	**124.8**

Activities (stressors)

Ecosystem
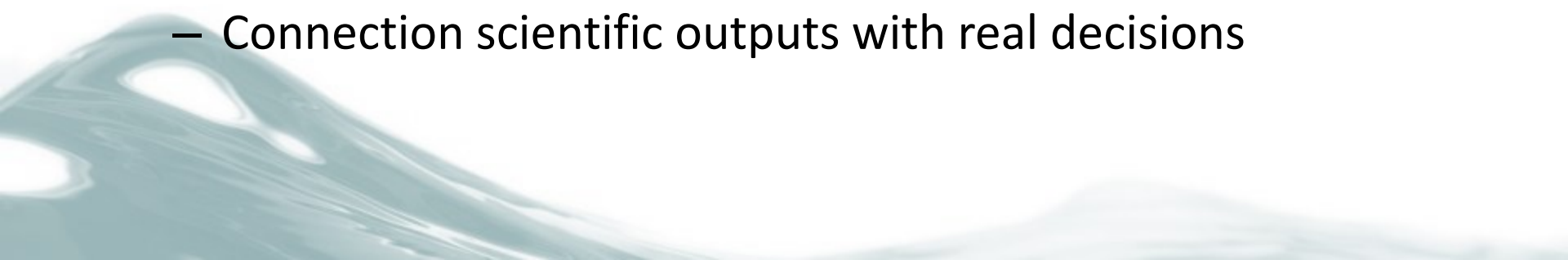
Implementation (management & monitoring)

Benefits (values)

Courtesy: Natural Capital Project

How do we value nature?

- Distortions in decision-making process damage the flows of ecosystem services making people and the environment poorer

- Conventional techniques do not satisfactorily address:
  - Biophysical and economic scales
  - Multiple provision of services to diverse interests of users
  - Synergies and trade-offs among services
  - Spatial and temporal dynamics
  - Connection scientific outputs with real decisions

The "ecosystem service cascade" model links ecosystems and biodiversity to human wellbeing

Ecosystems and biodiversity

Biophysical Structure or Process

Ecosystem properties

Ecosystem Function

Ecological integrity

Ecosystem Service

Regulating
Provisioning
Cultural services

Human wellbeing
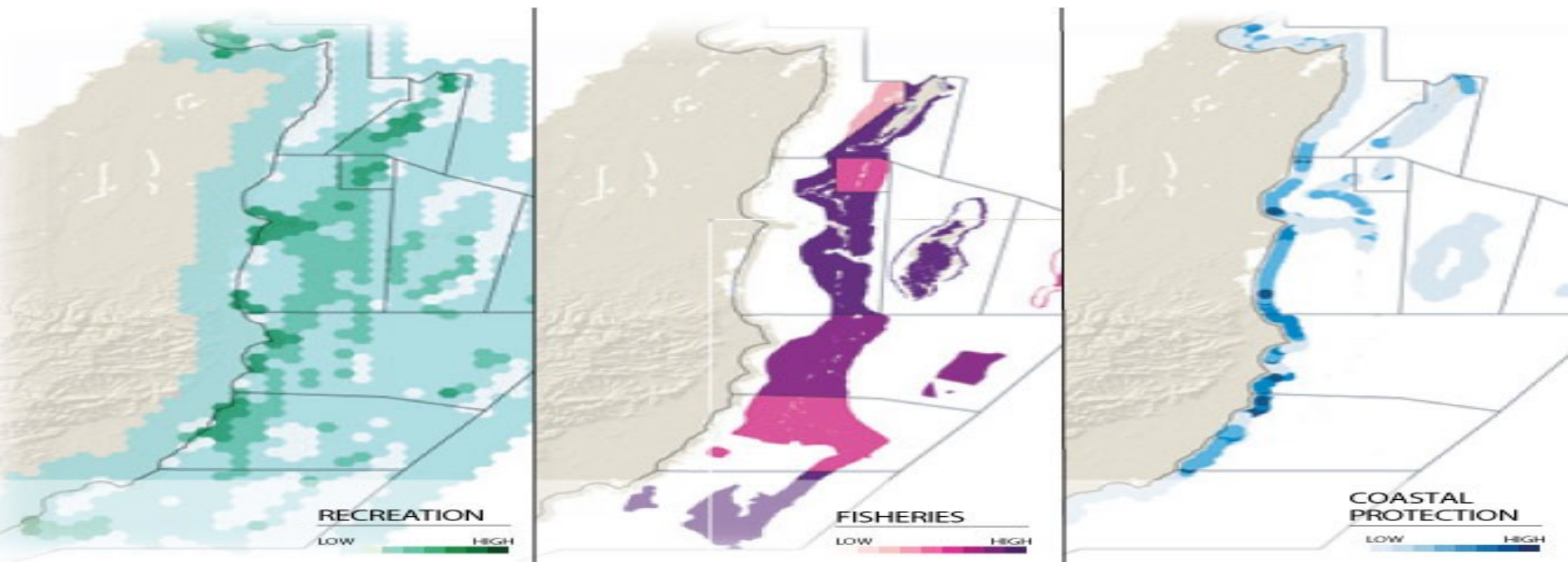
Human benefits

Social
Economic
Personal wellbeing

Value

Relative importance

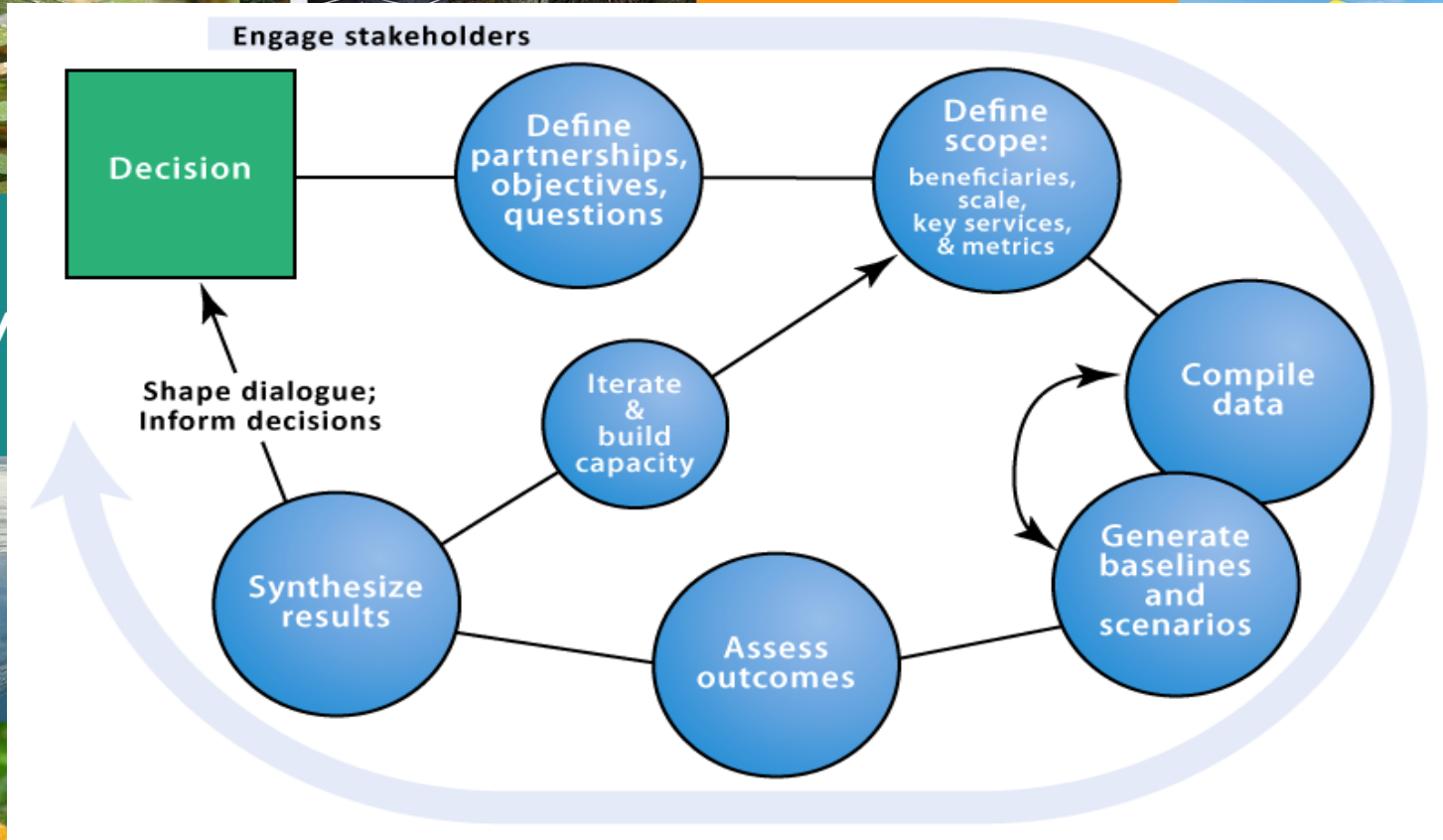**Source:** Haines-Young and Potschin (2010).

InVEST: Integrated Valuation of Ecosystem Services and Trade-offs

- Set of integrated models
- Biodiversity and multiple services
- Driven by future alternative scenarios
- Spatially explicit
- Biophysical and economic outputs
- Flexible and transferable

RECREATION
LOW   HIGH

FISHERIES
LOW   HIGH

COASTAL PROTECTION
LOW   HIGH

InVEST: Integrated Valuation of Ecosystem Services and Trade-offs


Courtesy: Natural Capital Project

Successful examples of cooperation (scientists, industry, administration and NGOs)

Case study 1 - Cooperation fisheries-tourism (Peninsula Valdes, Argentina)

Stefansky, S., Villasante, S. (2014) Ecosystem Services.

Case study 2 - Cooperation fisheries-tourism-aquaculture (Chile)

- Synergies and trade-offs between ES (fisheries, aquaculture, ecotourism)
- Scenario development for public policies (SSF, aboriginal communities, industrial fisheries)

Outeiro, L., Villasante, S. (2015) Ecosystem Services.
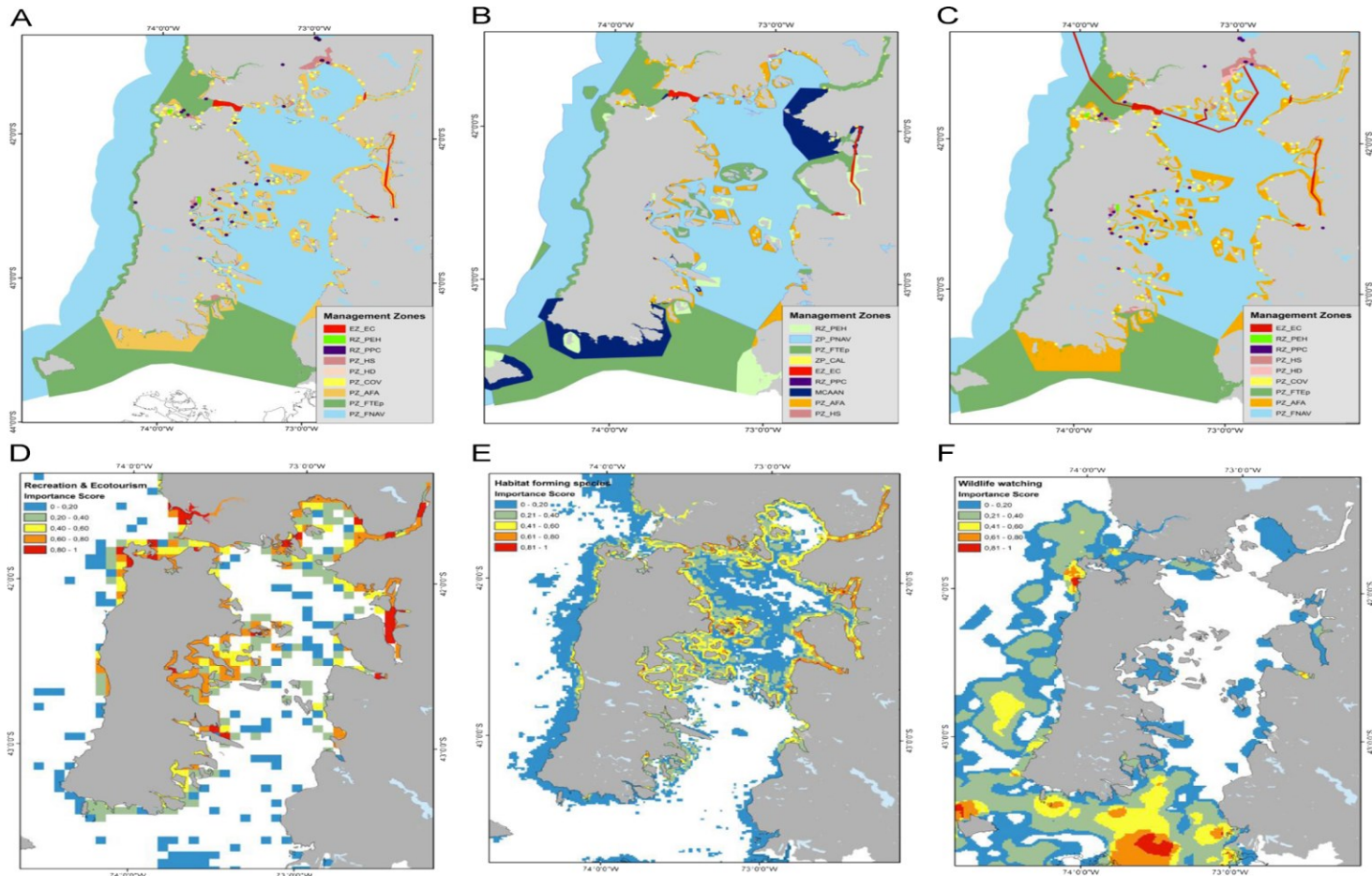
Case study 3 – Co-development of Marine Protected Areas (Spain)

- Contribution of MPA to ecosystem services (Marine Reserve "Os Miñarzos")
- Stakeholder participation and valuation "*in*" and "*outside*" MAPs

Villasante, S. et al. (2015) Marine Policy (submitted).

Cross-cutting lessons

1 - Engage local experts/leaders with technical tools

2 - Include ecosystem services information as part of an interactive and continue science-policy process

3 - Connect good and services and human wellbeing

4 - Adapt solutions to local context and problems

5 - Standardise objectives and languages

6 - Keep tools/methods simple

7 - Money is not always important

8 - Honest and transparent communication

Summary

- Great promise for linking ecosystem services and policy decision
- To realize the promise of ecosystem services will need to address issues of
  - Incentives
  - Participation
  - Valuation

Next generations expect our actions

My little Sophia (left) and her friend Sara