

Introduction to Ecosystem-Based Management

**MaMa CoCo Sea Workshop
March 18 2013**

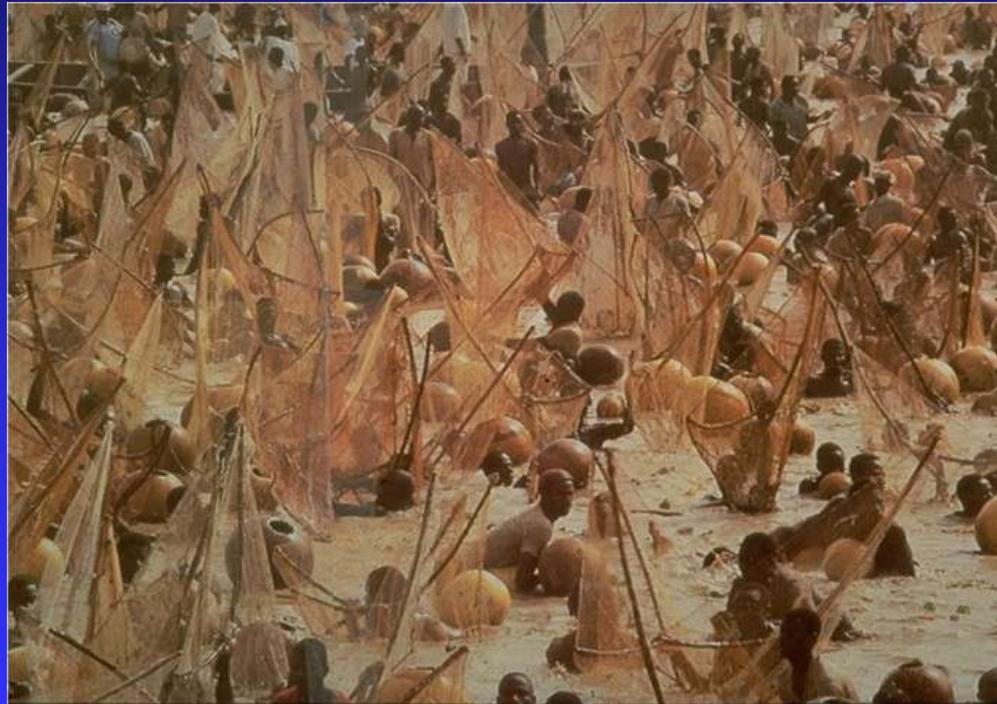
**Tundi Agardy
Sound Seas**

Worldwide shift toward EBM



driven by urgent need -

The coastal zone supports over 55% of the global population, with the highest density and doubling rates



This thin strip of land,
accounting for only 5% of the world's land mass,
provides disproportionate ecosystem services
important to humankind



Impacts are felt not only on
coastal areas...

...but throughout the seas
and the planet as a whole

A new approach to managing
impacts is needed -

EBM

EBM is a management approach that goes beyond examining a single issue, species, or ecosystem function in isolation.

Instead, EBM recognizes marine and coastal ecosystems for what they are: a rich mix of elements that interact

EBM aims to conserve and sustain ecosystems to benefit current and future human generations

Five Core Principles of EBM

1. Recognizing connections
2. Applying an ecosystem services perspective
3. Understanding and addressing cumulative impacts
4. Managing for multiple objectives
5. Embracing change, learning, and adapting

1. Recognize connections



2. Determine Ecosystem Services

- The benefits nature provides to us for free
- Provisioning of goods (food, materials, etc.)
- Ecological services:
 - ◆ Regulatory services (eg flood control)
 - ◆ Supporting services (eg nutrient cycling)
 - ◆ Cultural services (spiritual /historical values)

Mangroves and saltmarshes act as **natural filters**, trapping harmful sediments and excessive nutrients.

Scenic coastlines, islands, and coral reefs offer **recreational opportunities**, such as SCUBA diving, sea kayaking, and sailing.

Estuarine seagrasses and mangroves provide **nursery habitat** for commercial targeted fish and crustacean species.

Healthy rivers provide **drinking water** for communities and water for agriculture.

Streamside vegetation **reduces erosion** and traps pollutants.



Offshore reefs **create sand** and **protect the shoreline** from severe storms.

Healthy coral reefs are hotspots of **marine biodiversity** and can be a source for new medicines and health care products.

Sustainable fisheries provide food, create jobs, and support local economies.

Offshore energy provides power to support coastal development.

Marine ecosystems including seagrasses, mangroves, and saltmarshes act as **carbon sinks**, reducing greenhouse gases.

Five key marine ecosystem services of value to humans



Biodiversity

Fish nurseries

Water quality

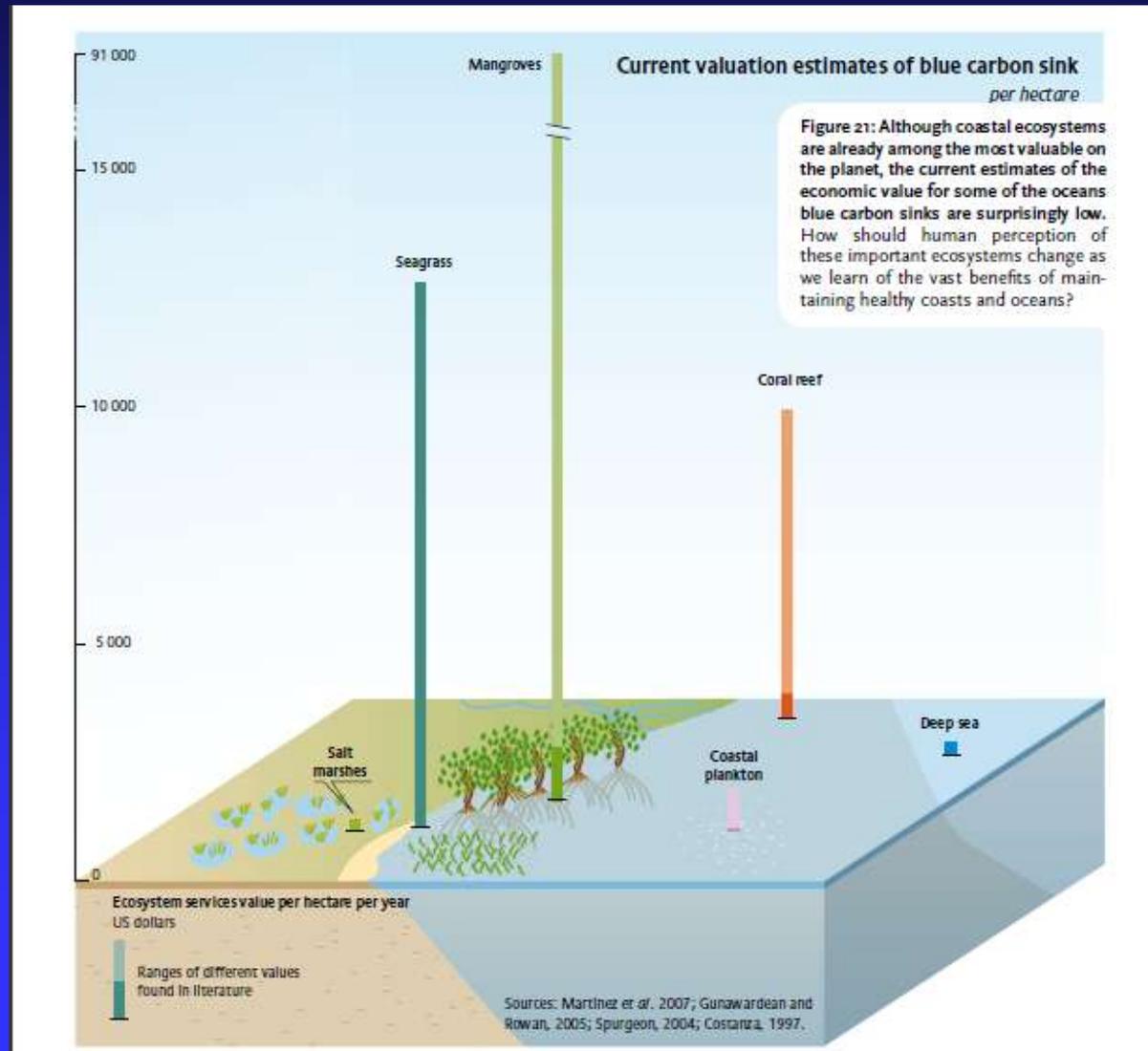


Carbon sequestration

Shoreline protection



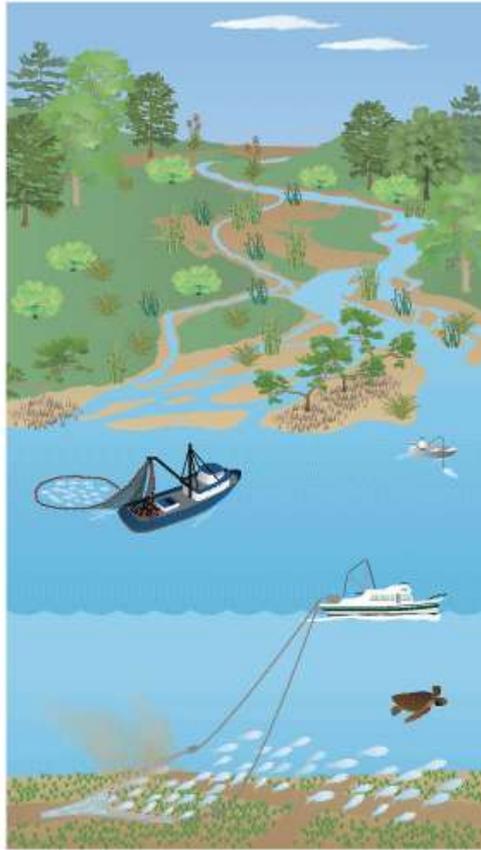
Valuation of ecosystem services is an emerging science



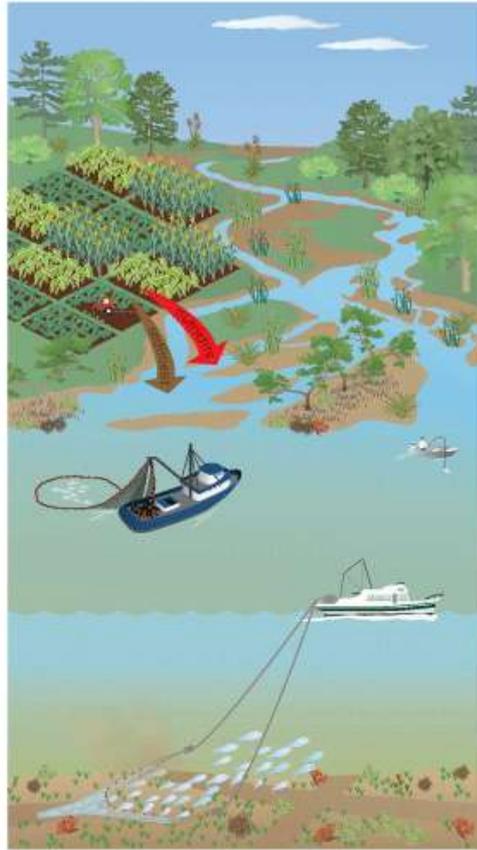
3. Assess cumulative impacts

Cumulative impacts

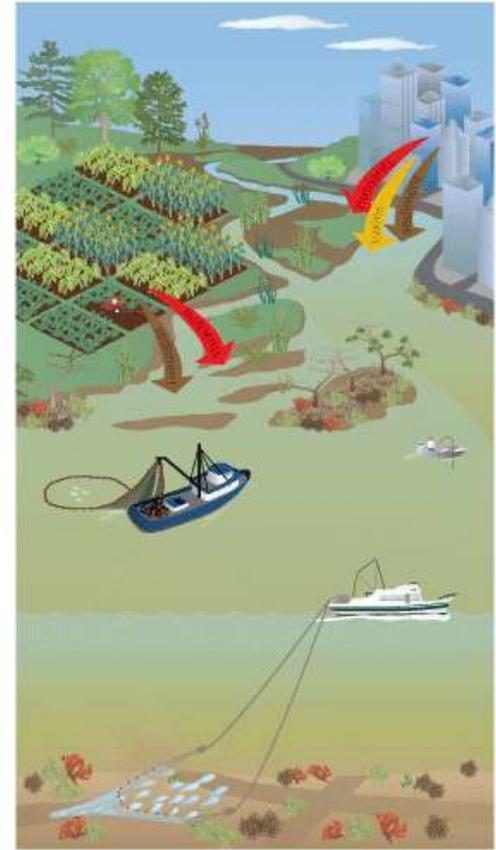
Overfishing



Overfishing + Agriculture



Overfishing + Agriculture + Development



4. Manage for many different uses,
understanding impacts

Pollution:
not only chemicals and debris

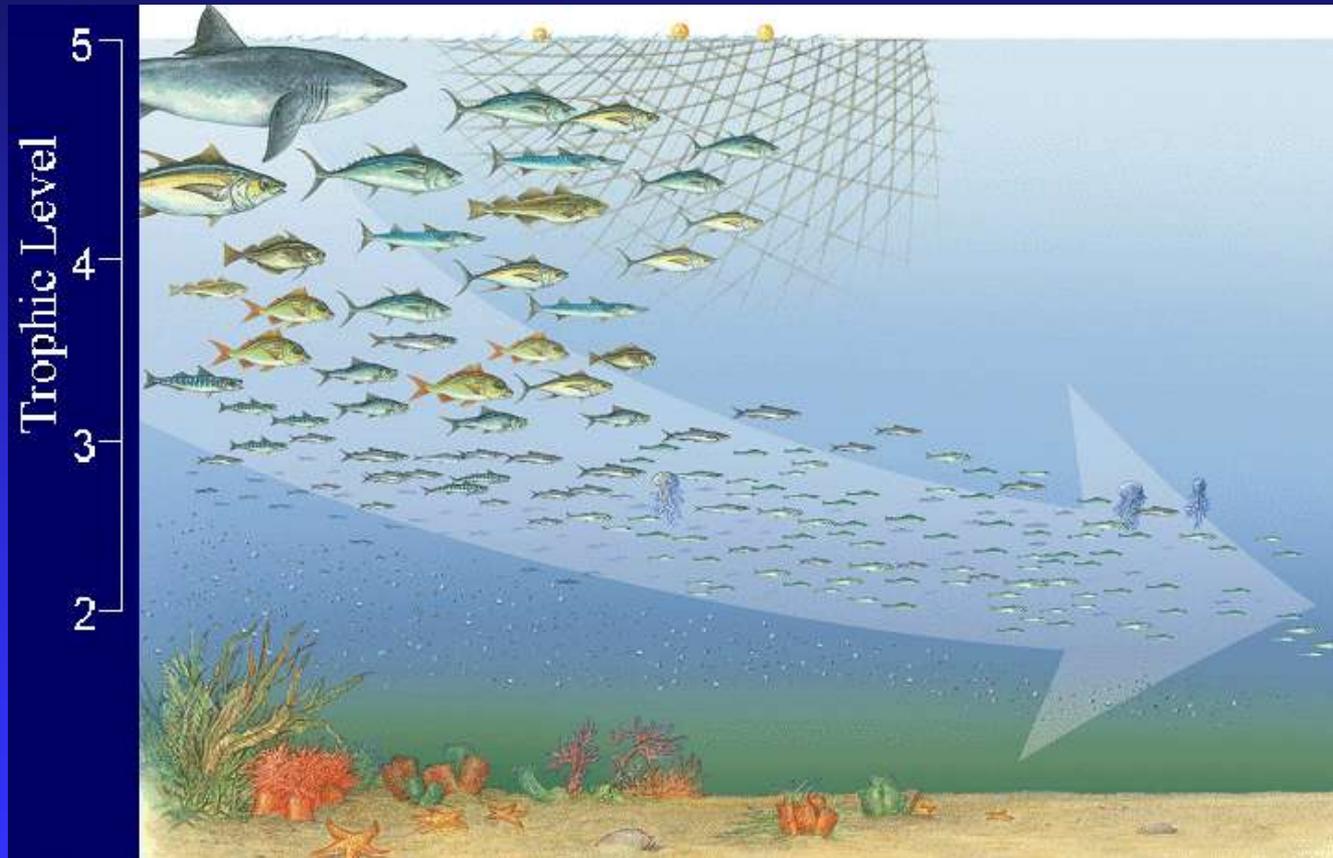


...but also noise

Eutrophication



Overfishing and destructive fishing

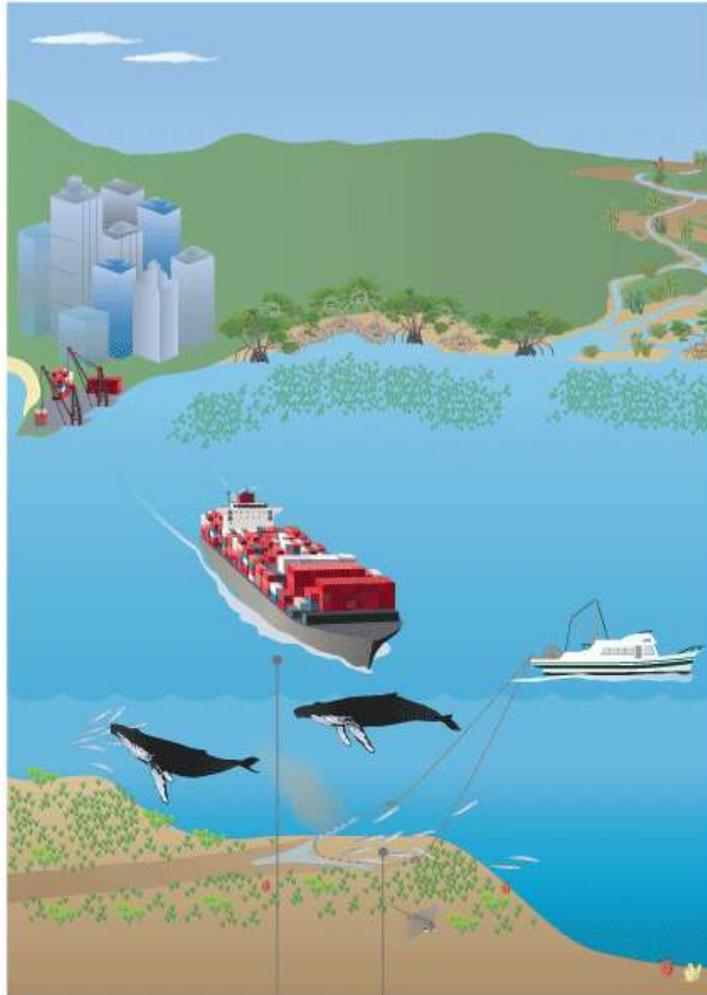


Unsustainable coastal development



Managing for multiple objectives

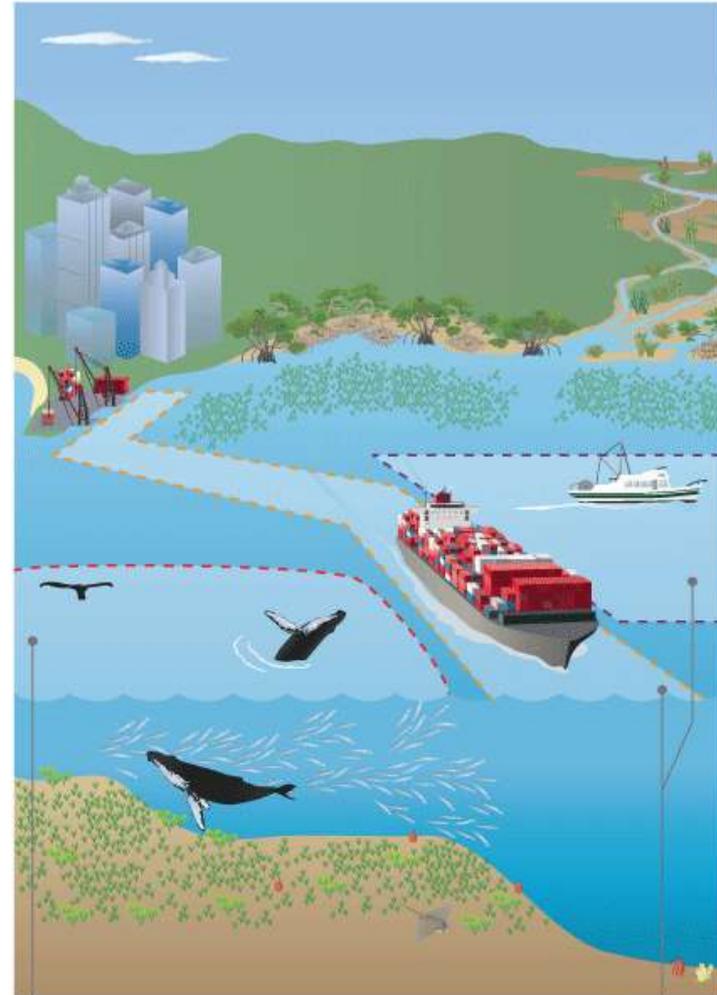
Conflicting uses



Shipping corridor passes through important feeding habitat for endangered whales, causing collisions.

Bottom fishing in the whale habitat leads to ocean floor disturbance and a decline in food sources for whales.

Accommodating uses and reducing conflict

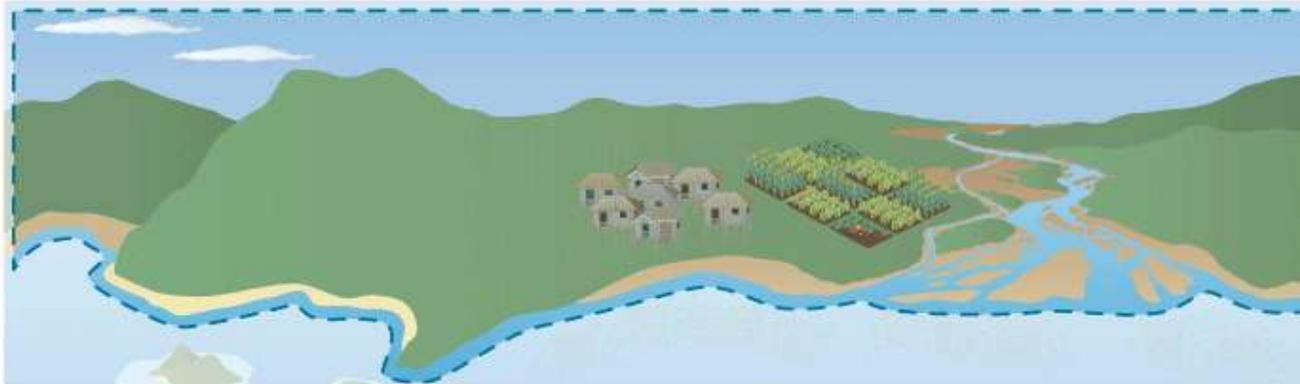


Key whale feeding habitat is closed to shipping traffic and fishing, and whale mortality decreases. Ocean floor recovers from fishing activity, biodiversity increases, and ecosystem processes are restored.

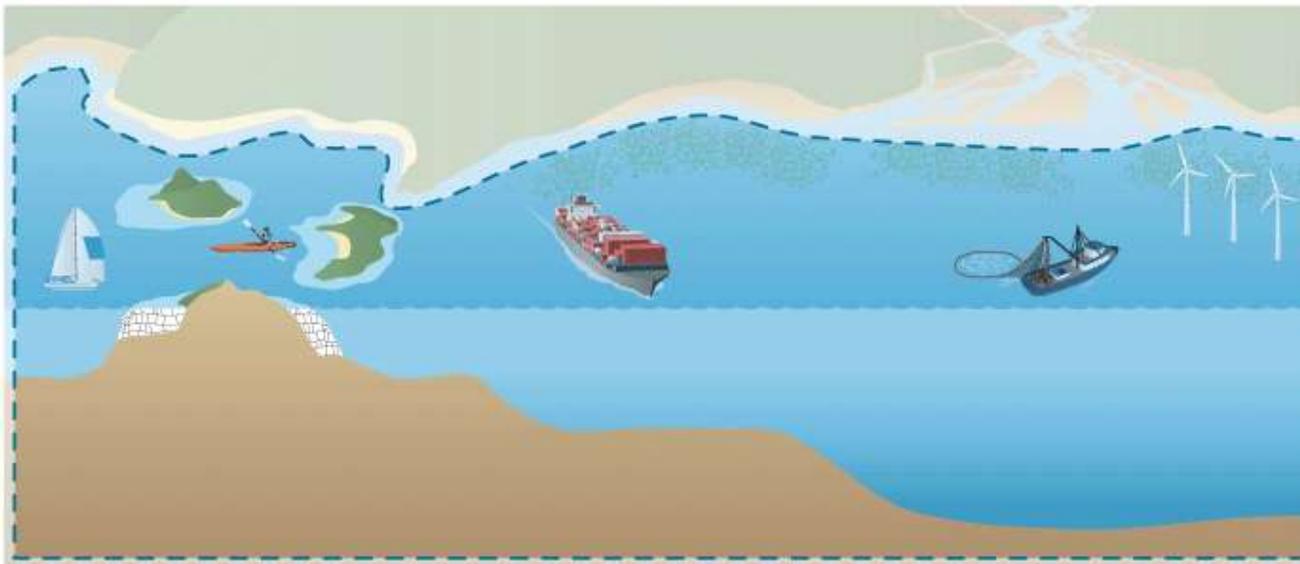
Shipping corridor is re-routed and new zones are created to support sustainable fishing in less sensitive habitats.

Tools for marine management

Integrated Coastal Zone Management



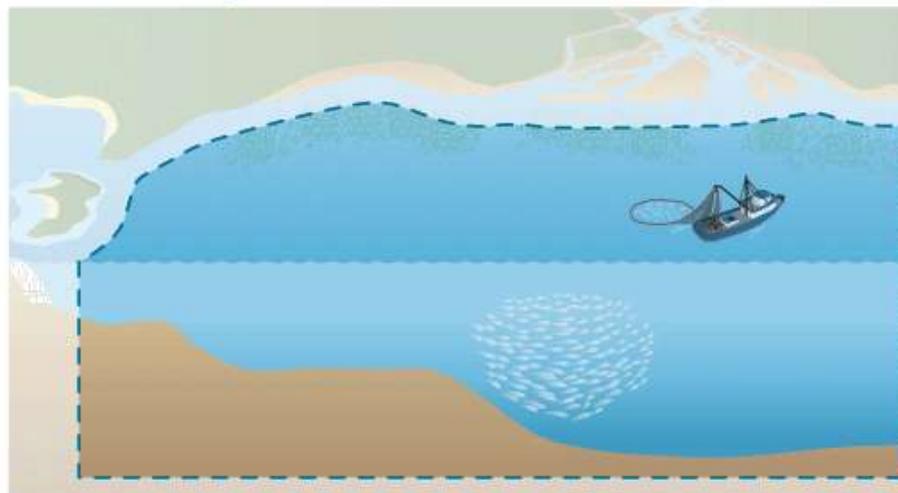
Marine Spatial Planning



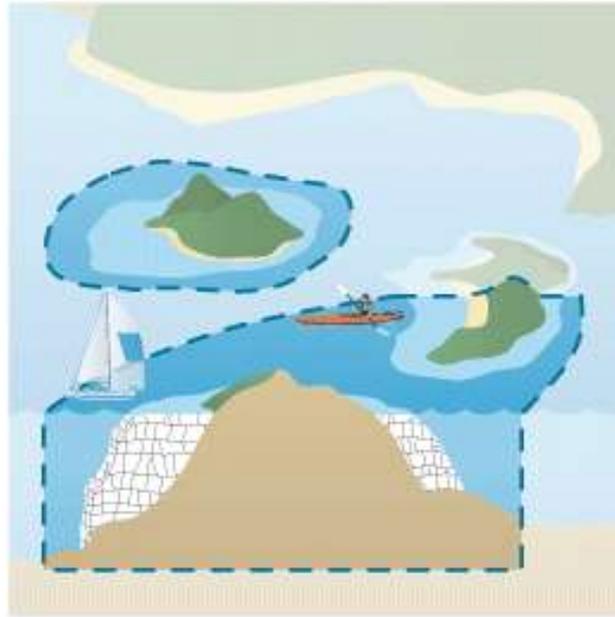
Watershed Management



Fisheries Management



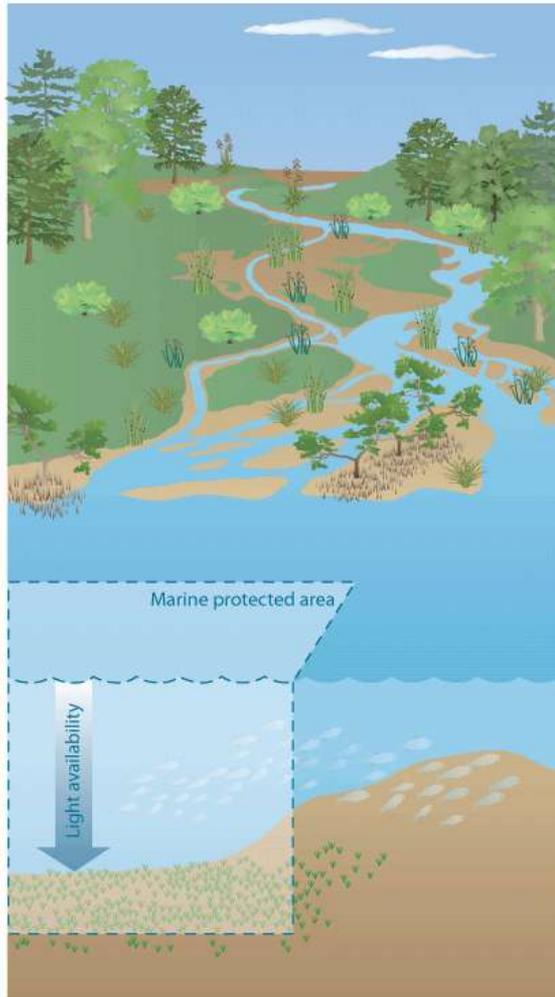
Marine Protected Areas



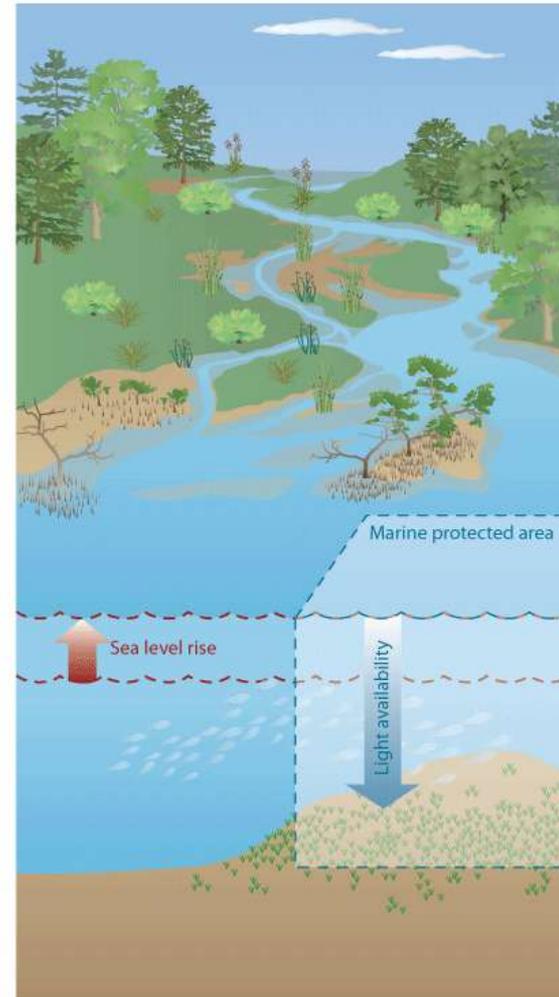
5. Embrace change, learn, adapt

Embracing change, learning, and adapting

Present



Future



Research,
Monitoring,
and Communication

- are all important

Where do all the elements of EBM fit together?



Spatial Management Areas and Zoned Areas

Ocean Zoning can:

- Protect what is ecologically most important
- Create rationalization of use that is efficient
- Minimize user conflicts
- Force the integration of management sectors
- Reduce enforcement costs
- Create the best possible opportunities for adaptive management

Zoning can bring together conservation and development interests



There are many different ways to achieve EBM

- At different scales
- Within different biomes
- To accomplish different goals
- Under different governance regimes

Any step in that direction
is a positive one!



Remember,
EBM is a journey



not a destination...

Thank you!

