

Integrated Ecosystem Assessments



Support Ecosystem-
based Management
in the California Current

IEA Objectives

- Provide evaluation of management strategies and advice
 - Comprehensive integration of diverse ecosystem information
 - Incorporate economic and social science data
 - Evaluate the benefits and risks to social and ecological sectors posed by management actions
 - Synthesize best-available science for effective ecosystem-based management

Integrated Ecosystem Assessment

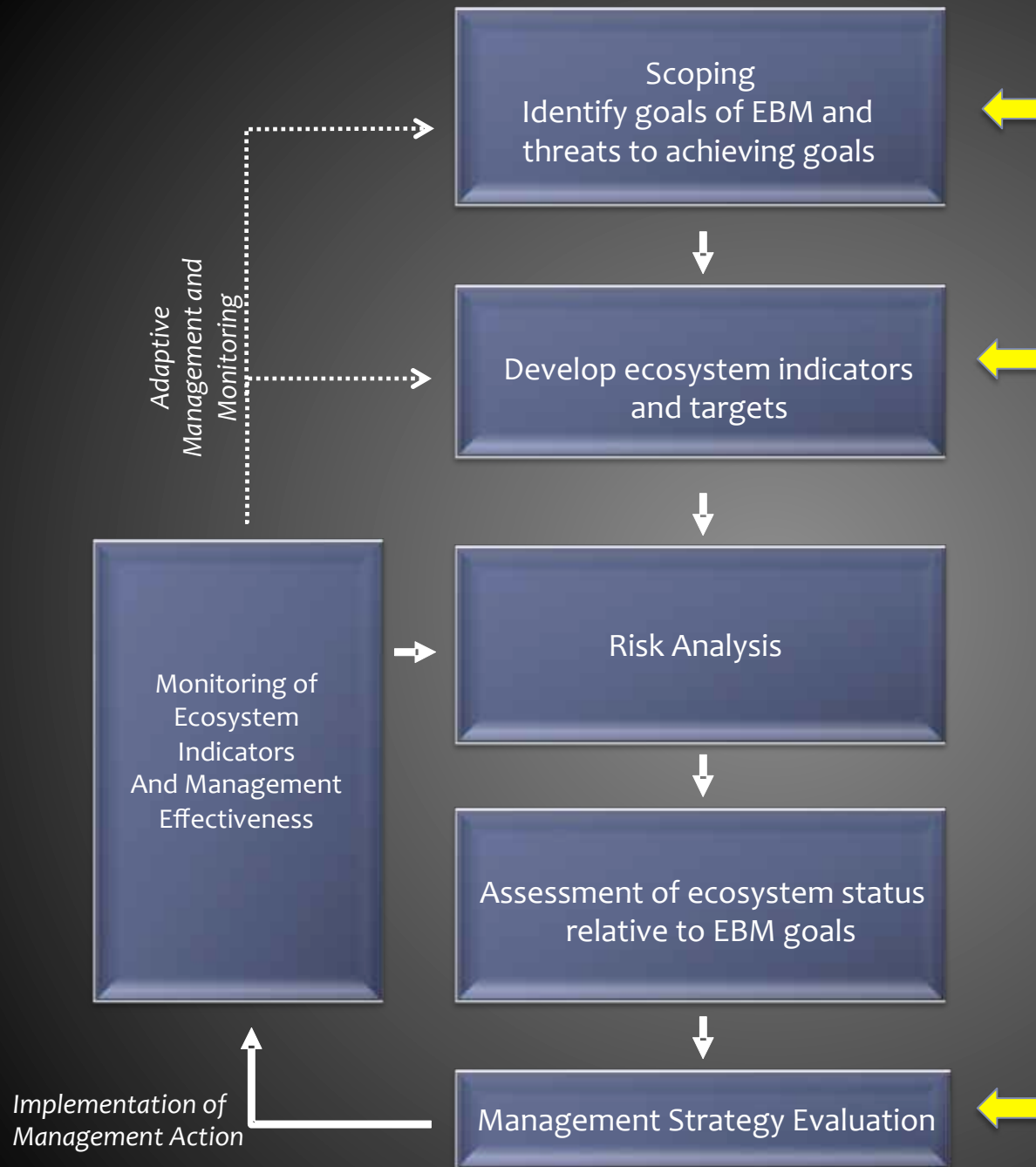


IEAs require stakeholder, scientist and manager collaboration

Example: Setting IEA goals

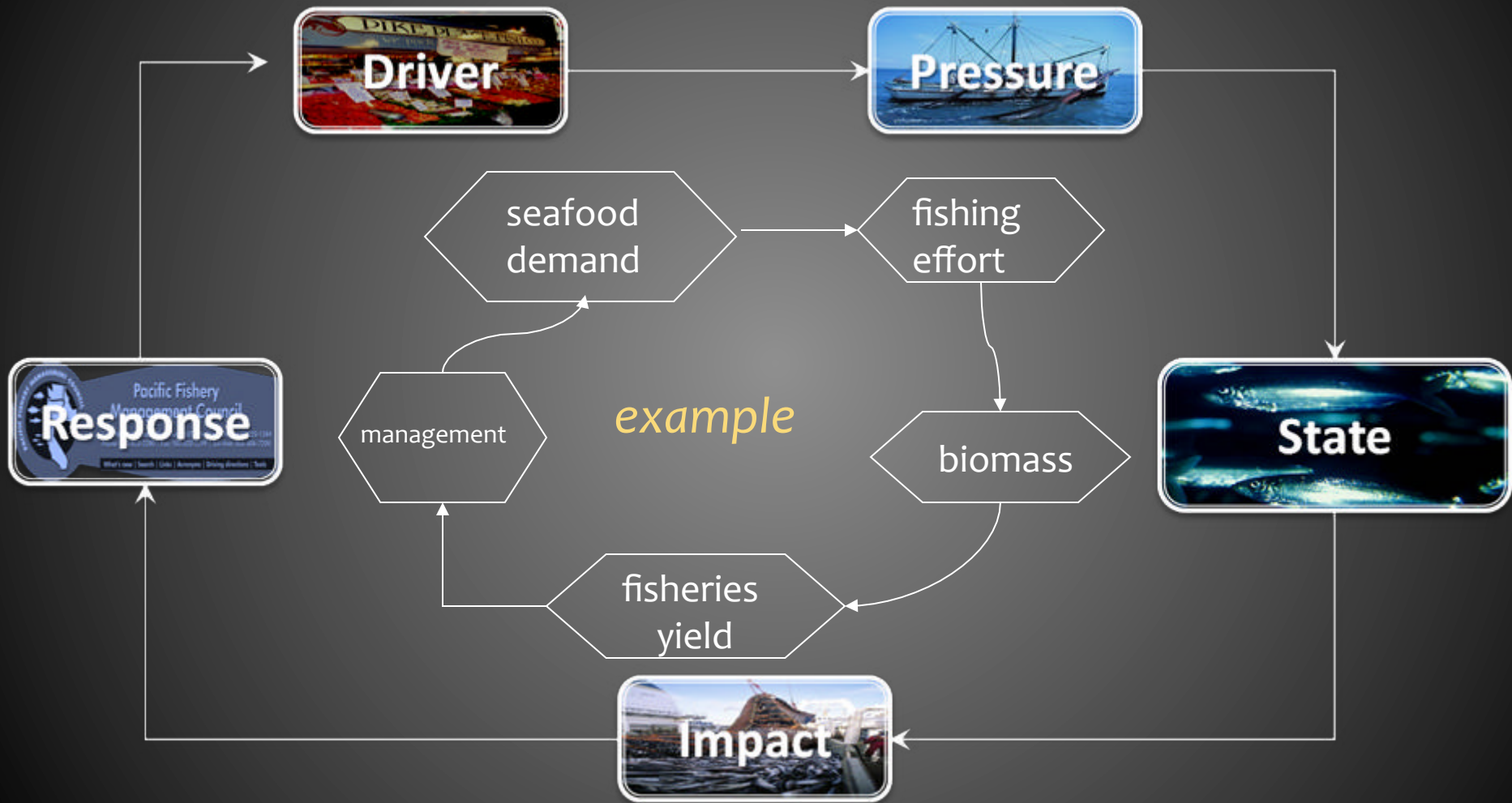


Integrated Ecosystem Assessment



Driver-Pressure-State-Impact-Response DPSIR







Driver / Pressures

Shipping

FW
Habitat
issues

Coastal
zone
Develop-
ment

Fishing

Invasive
species

Naval
exercises

Aquaculture

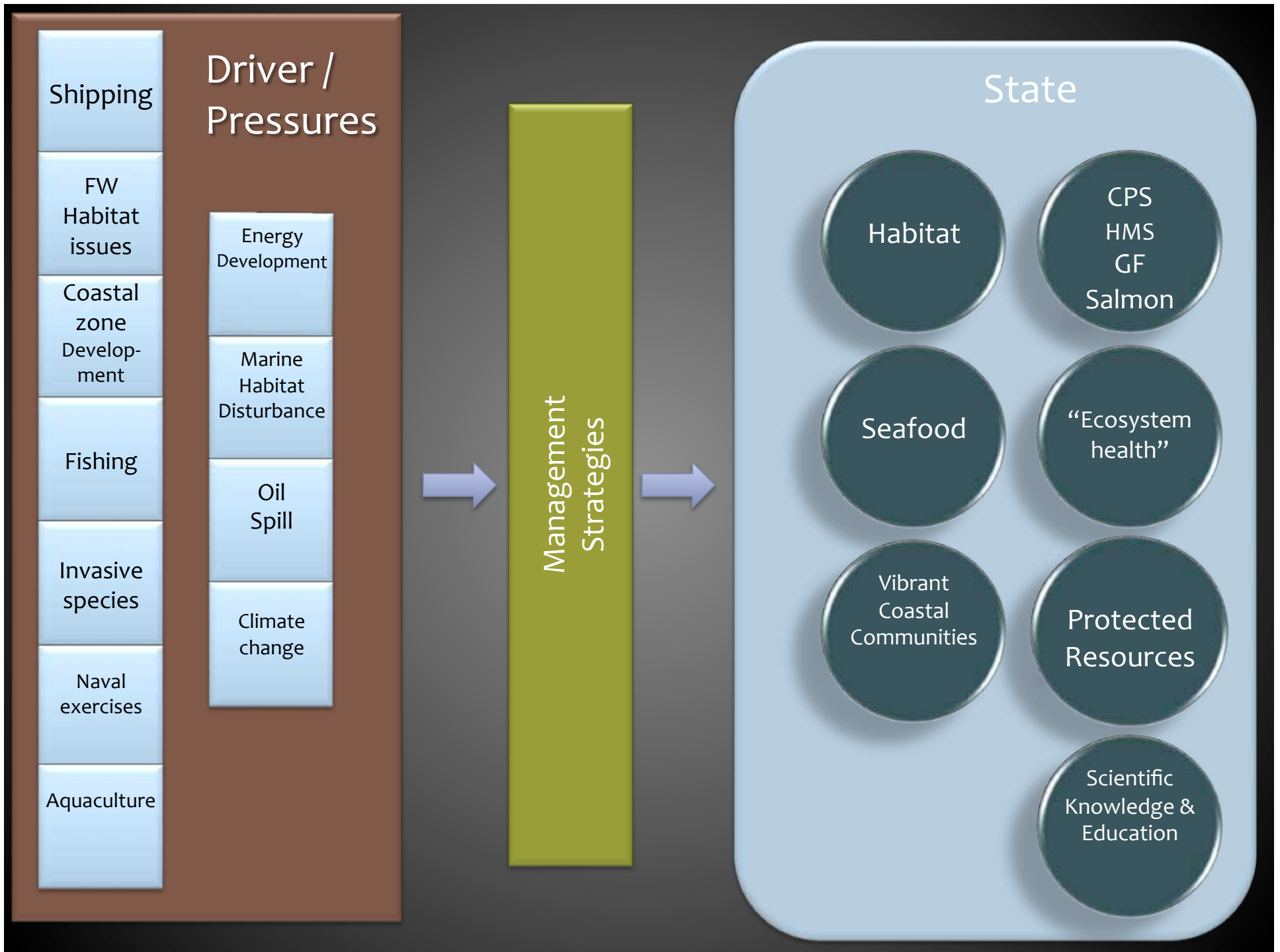
Energy
Development

Marine
Habitat
Disturbance

Oil
Spill

Climate
change





Driver / Pressures

Marine
Habitat
Disturbance

Fishing

Climate
change



MPAs

ITQs

Habitat
(EFH, CH)



Status
quo

State

Green
Sturgeon
Protected
Resource

Ground
fish

Salmon

“Ecosystem
health”

Fishing

Marine habitat disturbance

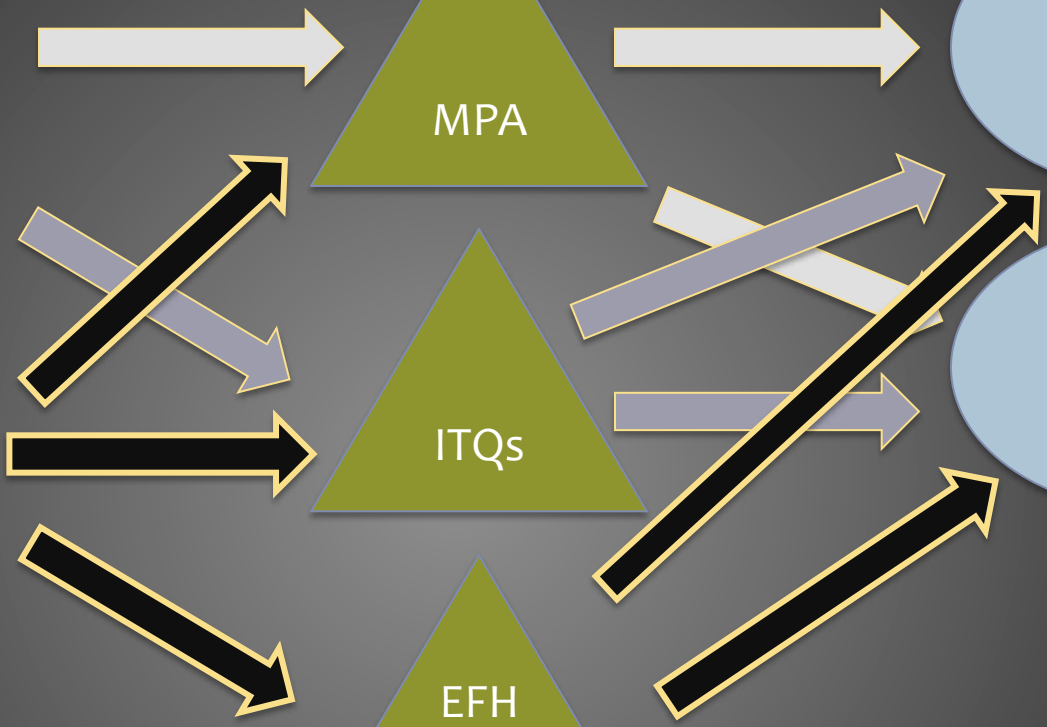
MPA

ITQs

EFH
Critical habitat

Ecosystem Health

Groundfish





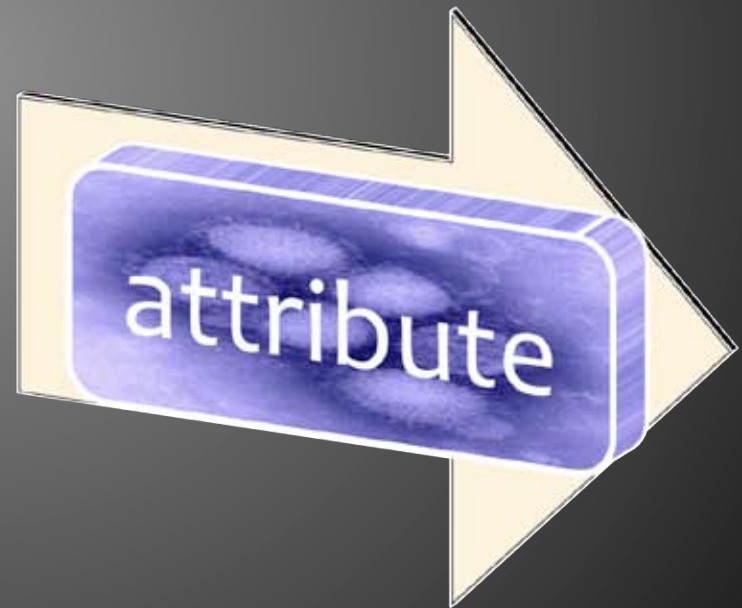
Ecosystem
Health

INDICATORS

Ecosystem attributes: defining “healthy”

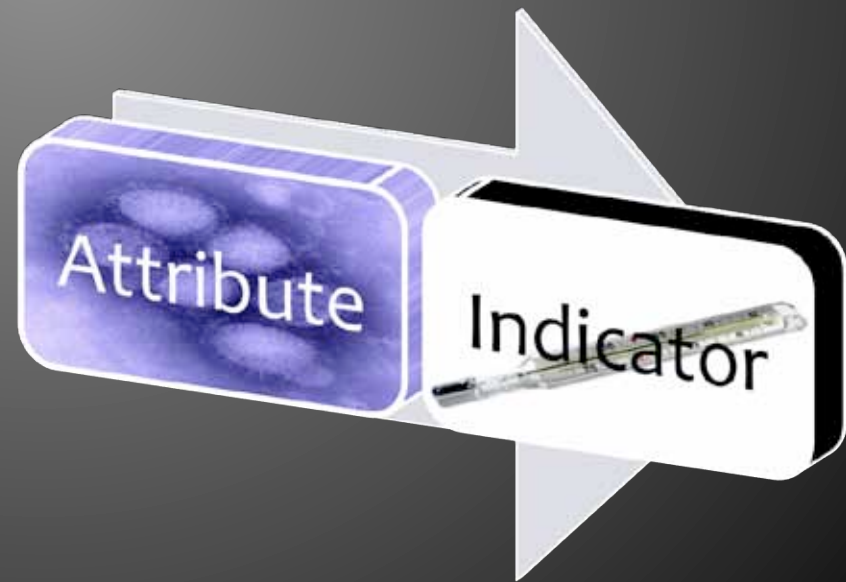
Fundamental structural or functional properties that underlie the delivery of ecosystem goods and services.

- Diversity
- Energetics
- Food web structure
- Nutrient cycling
- Resilience

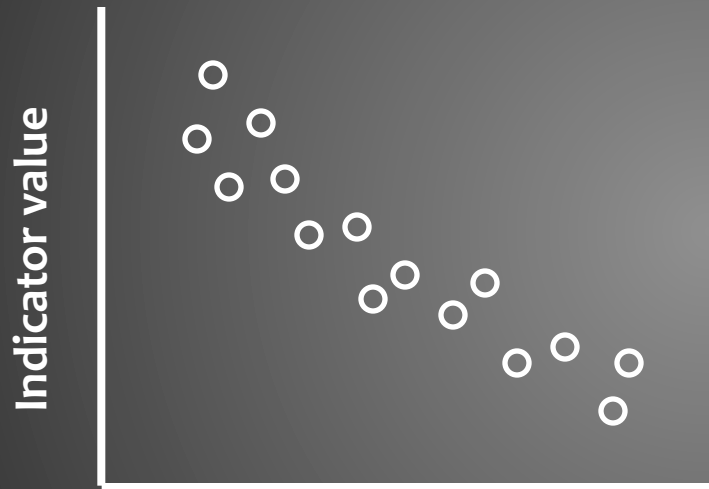


Indicator

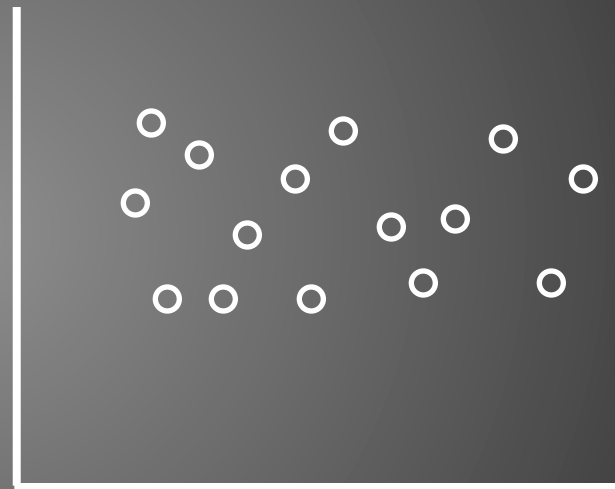
Empirically tractable metrics that reflect the status or trend in ecosystem attributes



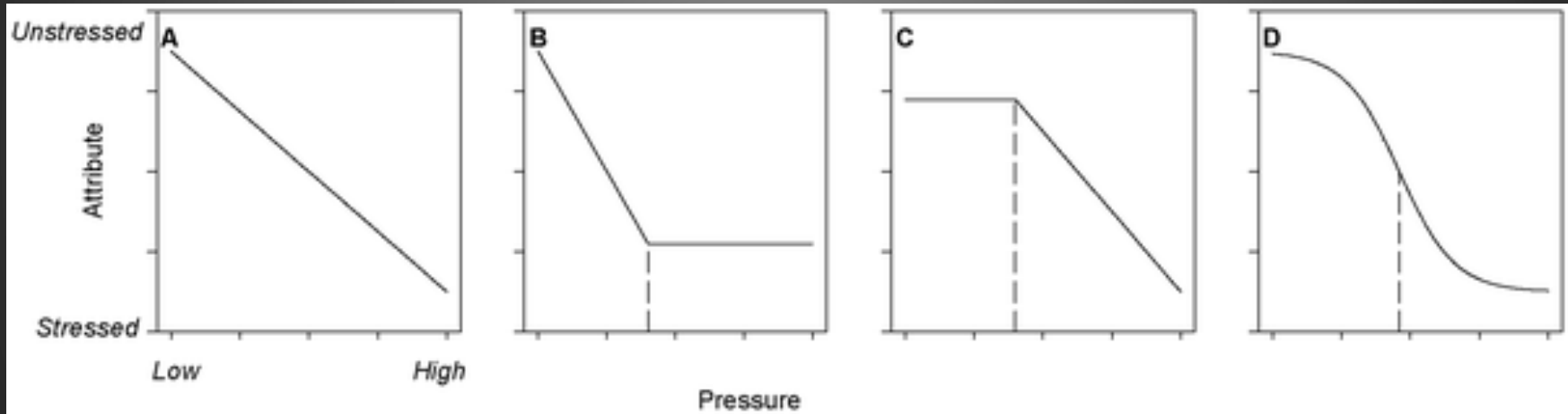
Meaningful indicator



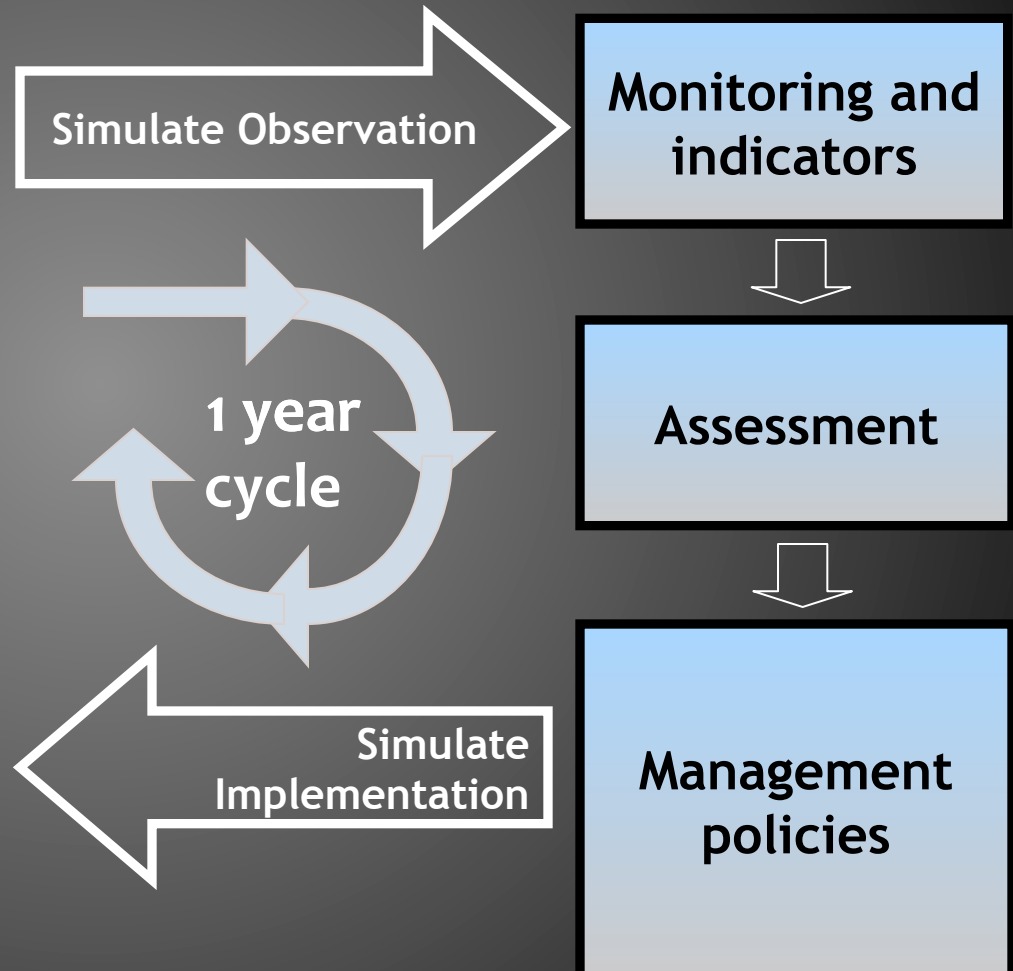
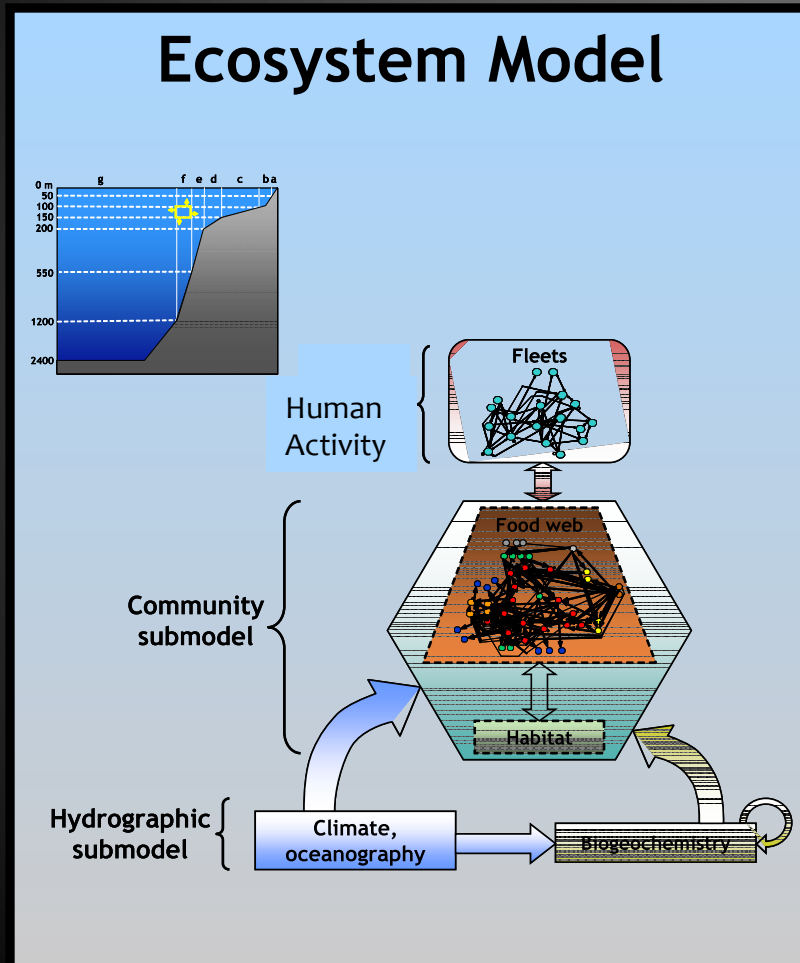
Not so meaningful indicator



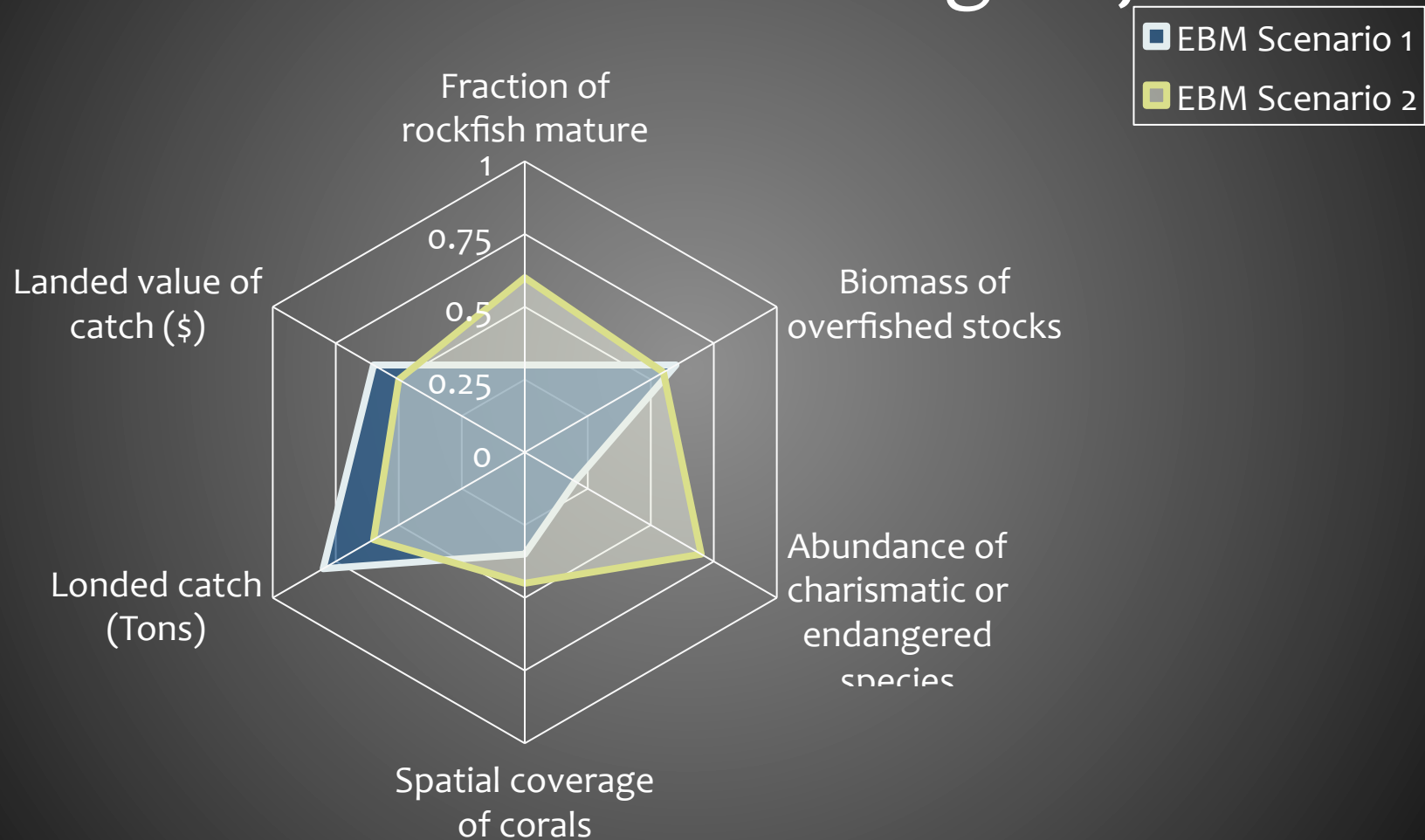
Attribute value



Evaluate Portfolios of Management Strategies



IEAs evaluate EBM strategies in terms of trade-offs among objectives



California Current

- Implement an initial IEA in the California Current (CC)
 - Establish data management and ecosystem-modeling infrastructure
 - Focus on a subset of drivers, pressures, and management strategies that influence ecosystem management targets
 - Outline steps to finalize the CC IEA with additional FY11 funding

California Current Deliverables

- Data system and management framework
- Test indicator performance
- Atlantis based model framework
- Statistical and analytical models and analyses for risk assessment and management strategy evaluation (MSE)
- Publications documenting CC IEA creation and application of MSE
- CC Ecosystem Status Report
- MSE products
- Engagement with sectors (e.g., WCGA, PFMC, NMSP, ROs)

end

Integrated Ecosystem Assessment

Current Focus

- **Work Plan:**

- Data management and integration
- Data gaps
- Ecosystem models and socioeconomic modules
- Integrative indicators of ecosystem status
- Operational IEA within the California Current
- Management strategy evaluation