Integrated Ecosystem Assessment Program: *EA in Action*

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Second International Science and Policy Conference on

Implementation of the Ecosystem Approach to Management in the Arctic

Bergen, Norway

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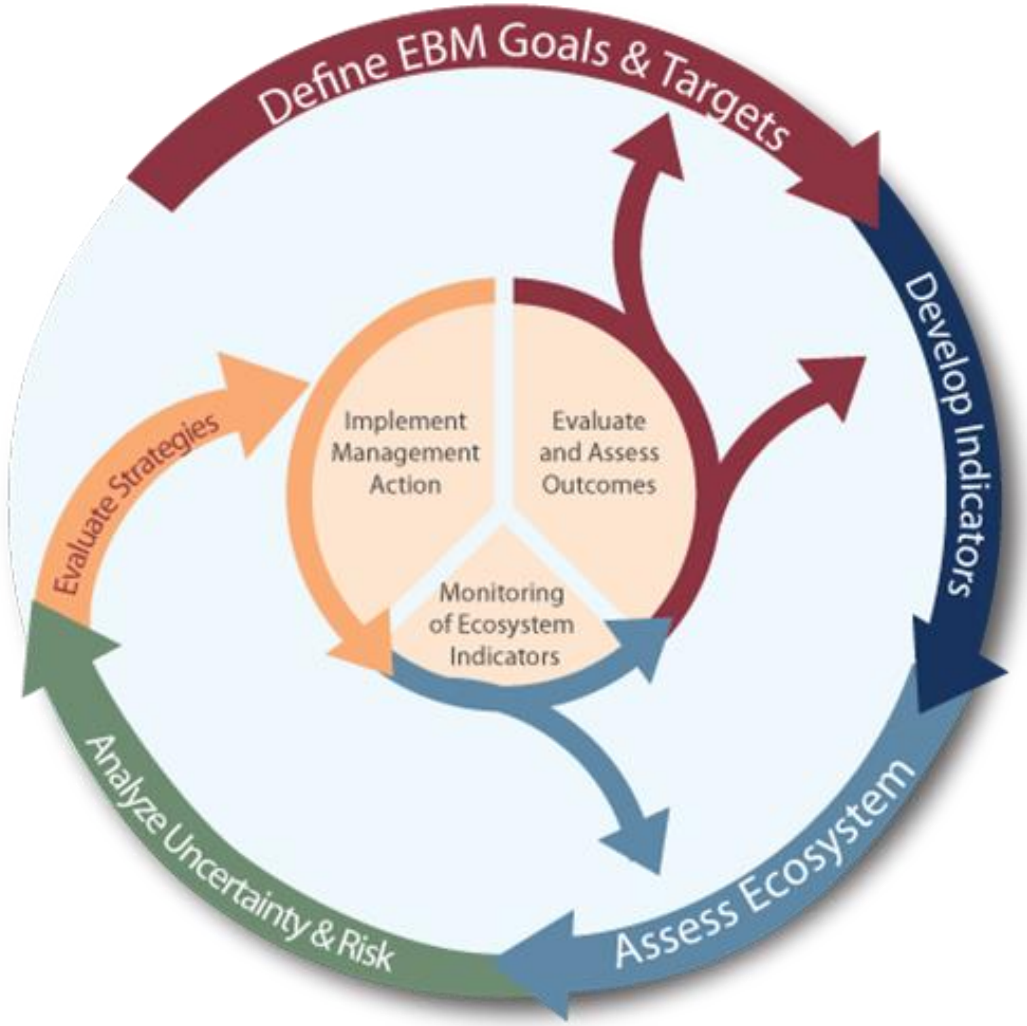
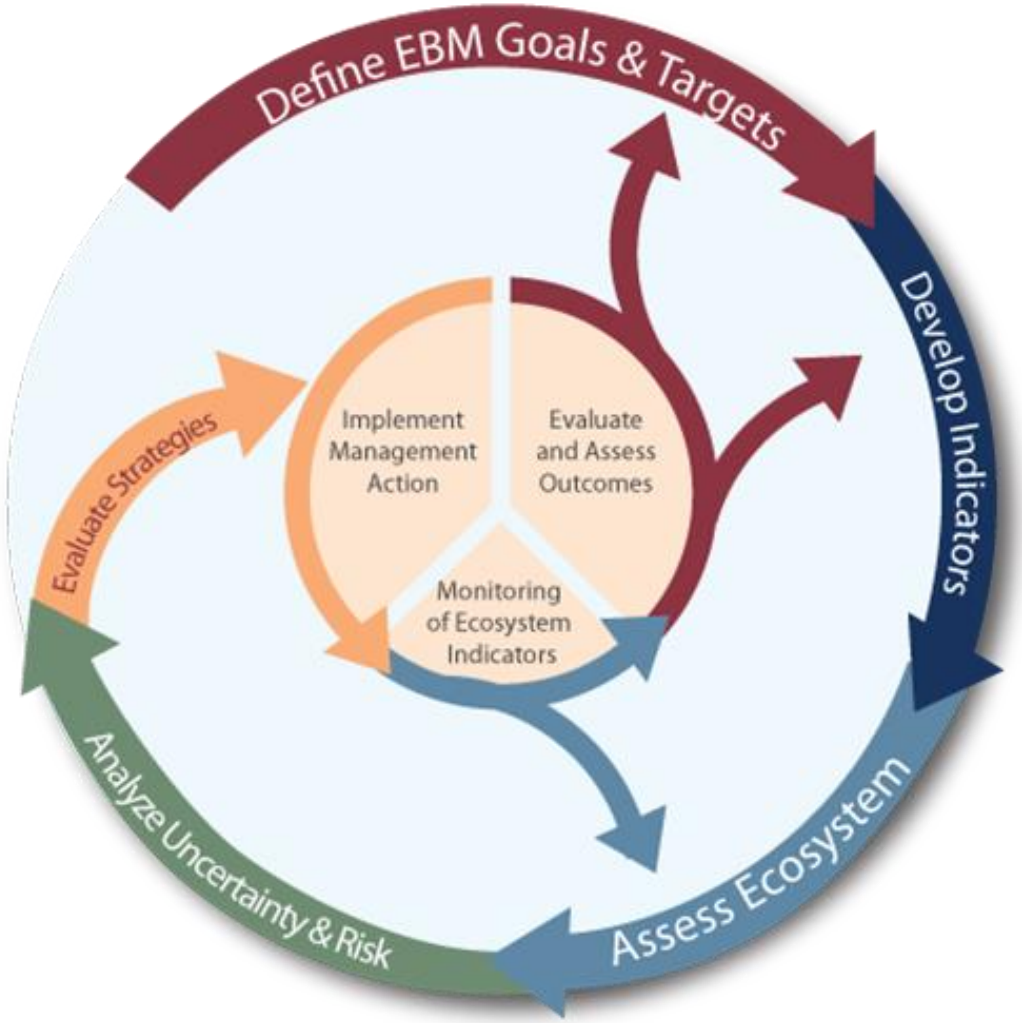
IEAs provide ecosystem science to meet the needs of managers and stakeholders



Guiding framework to implement ecosystem-based management while each step produces **valuable science** and **builds strong partnerships**

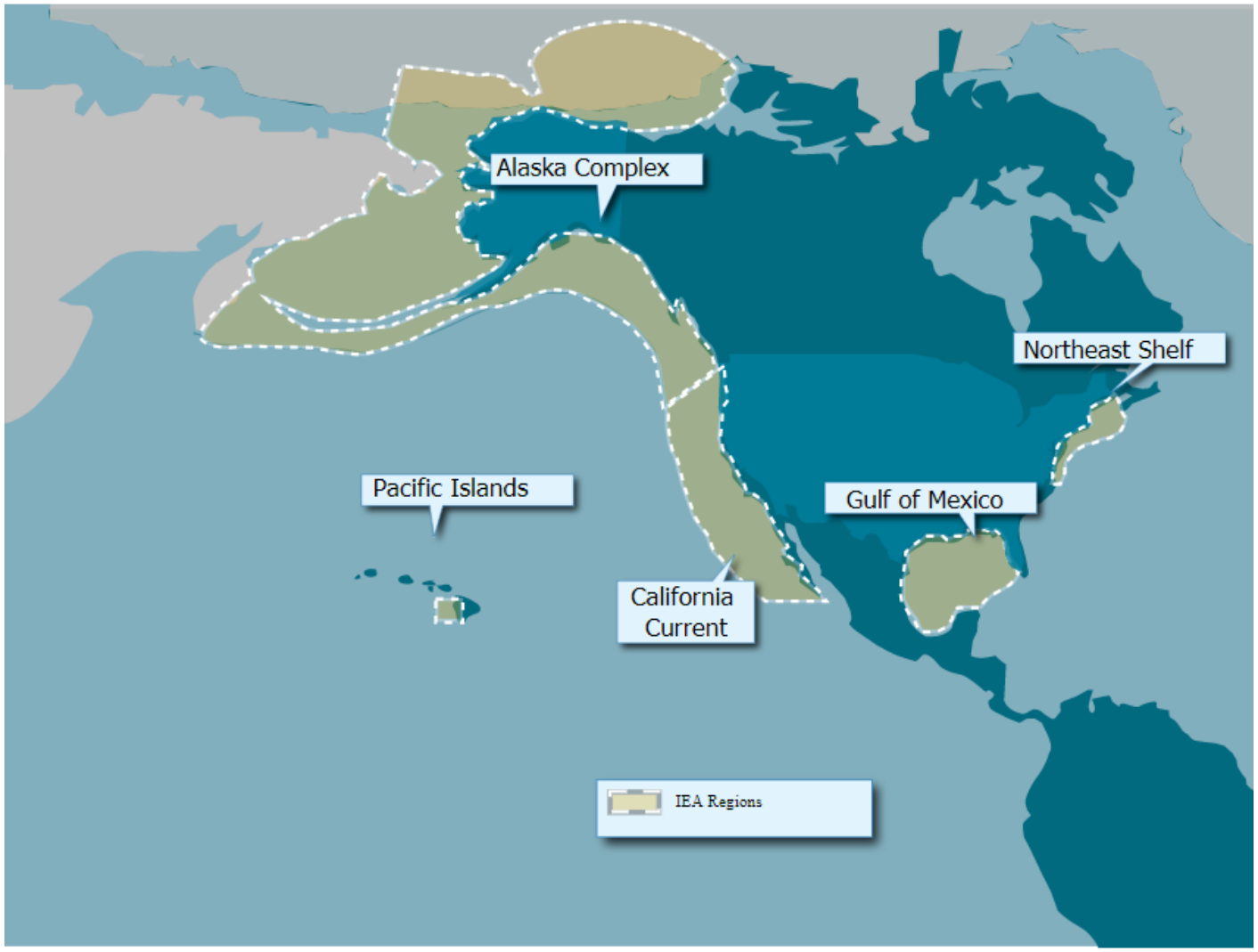
The Steps of the IEA Approach

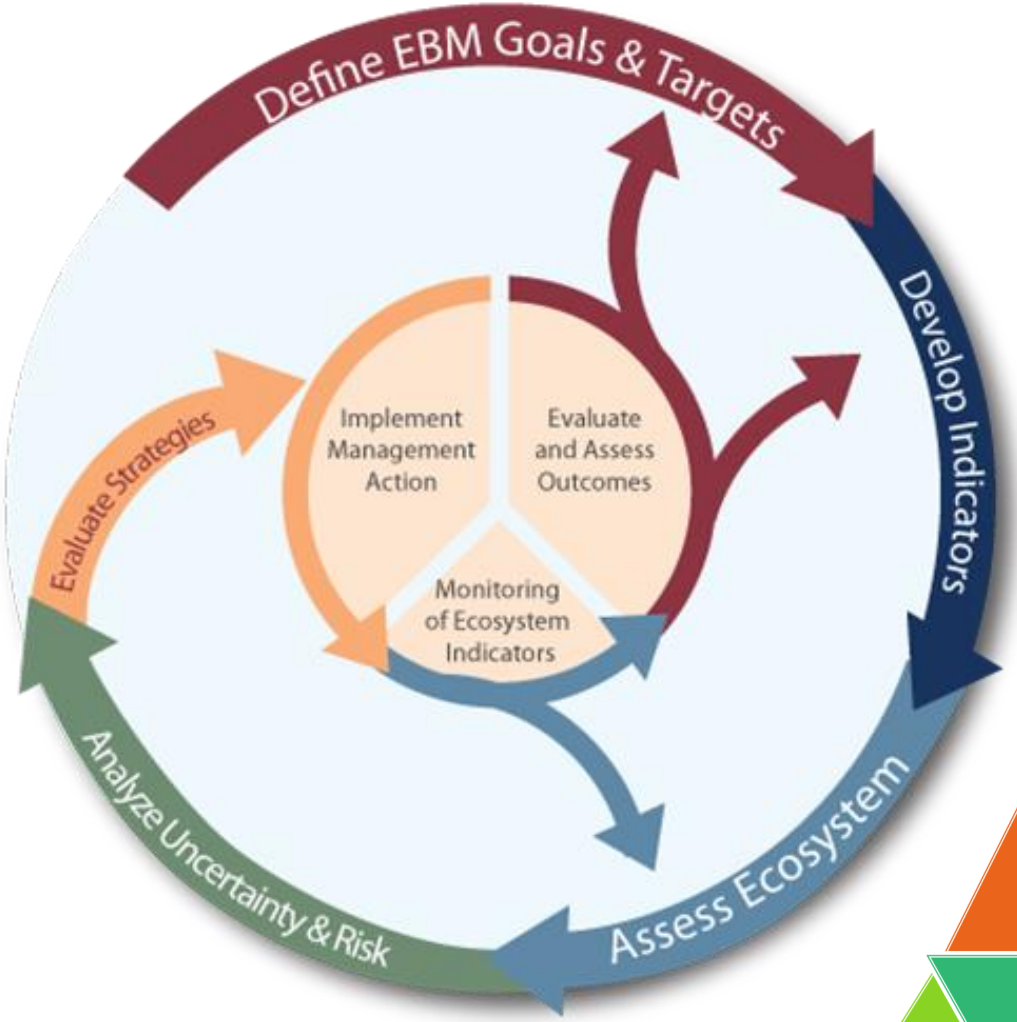
NOAA Integrated Ecosystem Assessment

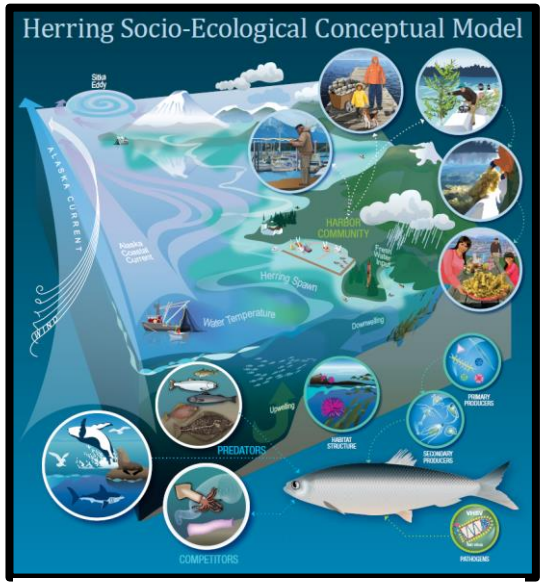


1. **Clearly define goals and the system of interest.**
2. **Identify, select and (when needed) develop indicators** that capture the status and trends of key ecosystem components defined in the first step of the approach.
3. **Assess the ecosystem**, which often results in Ecosystem Status Reports.
4. **Conduct a risk assessment.**
5. **Evaluate management strategies.**

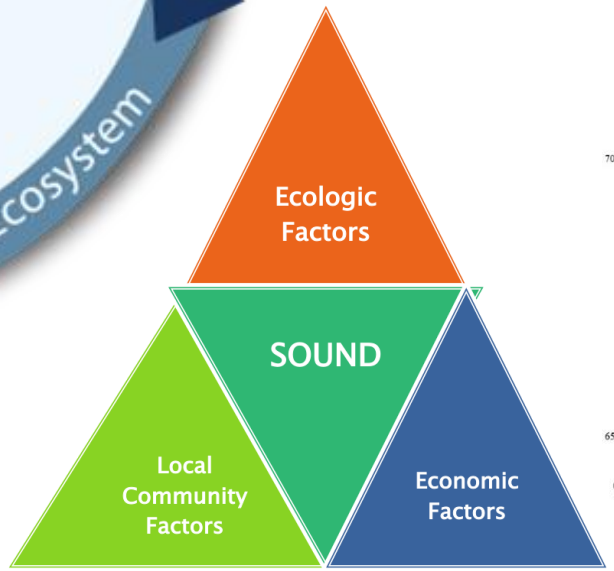
Implemented in 5 regions



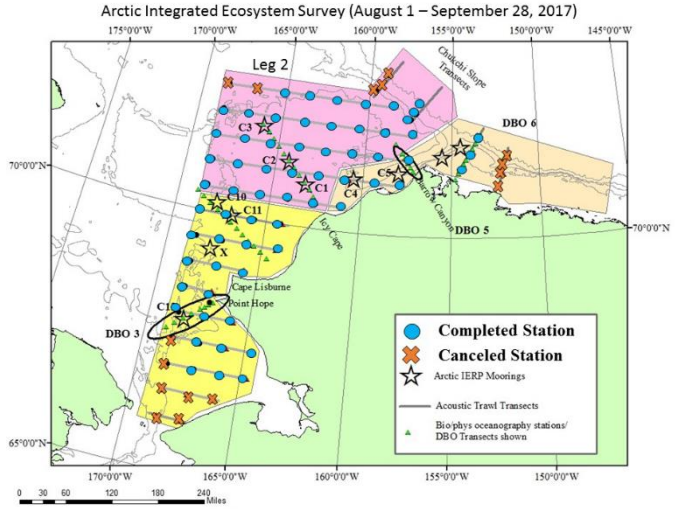




J. Rosellen-Druker

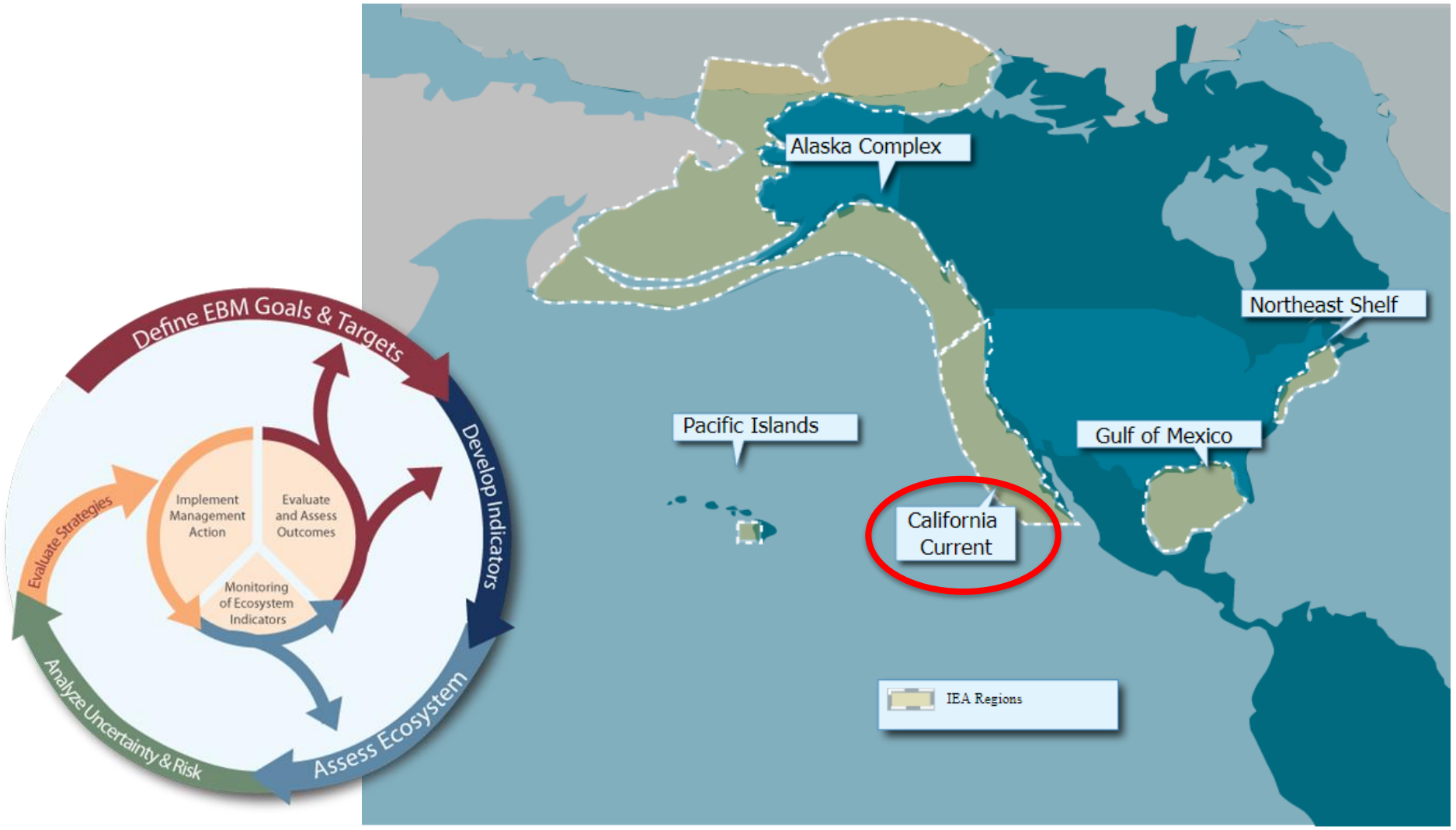


S. Moore

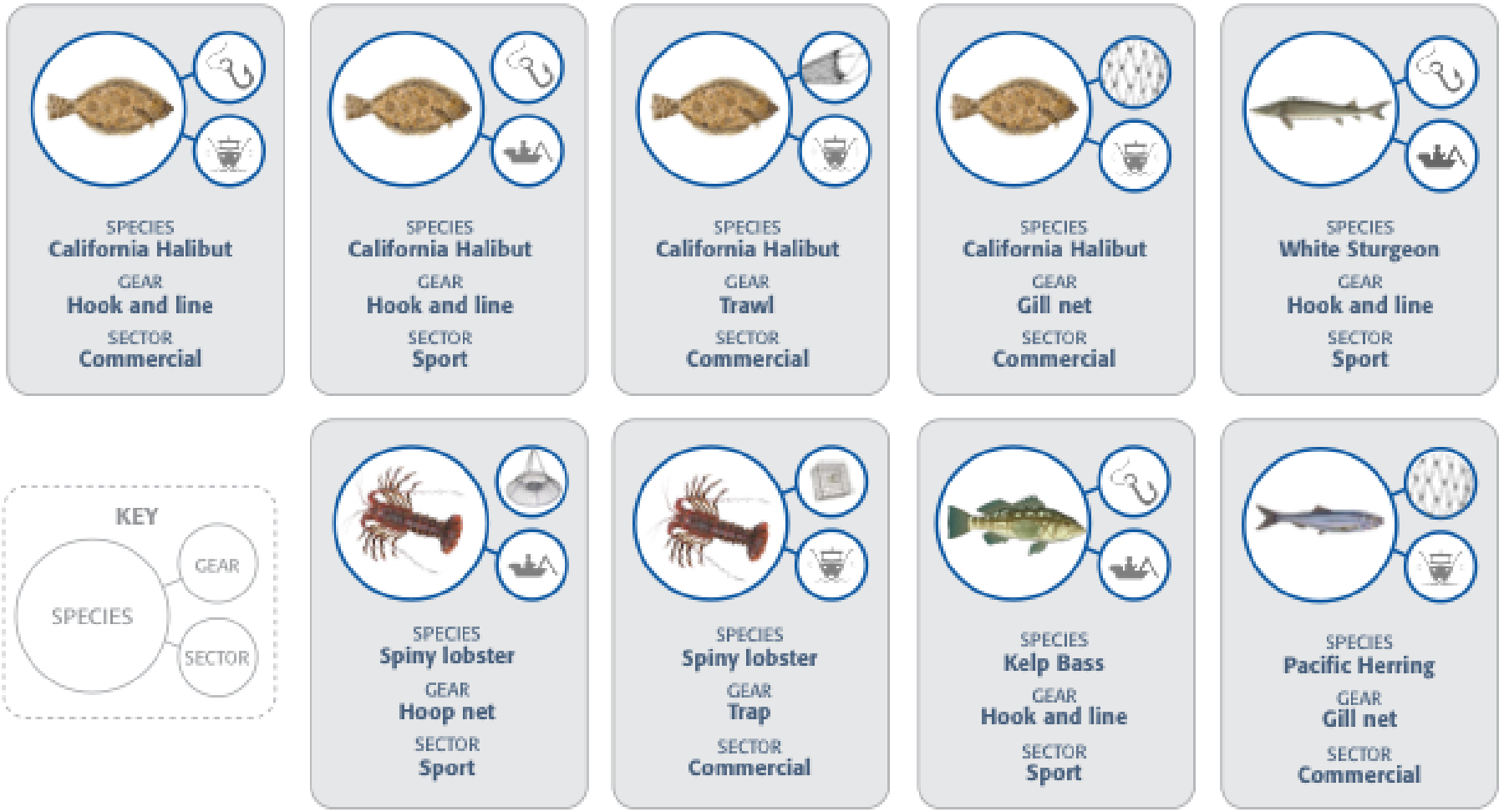


L. Eisner

Implemented in 5 regions



Pilot study focused on risk to target species from nine California fisheries

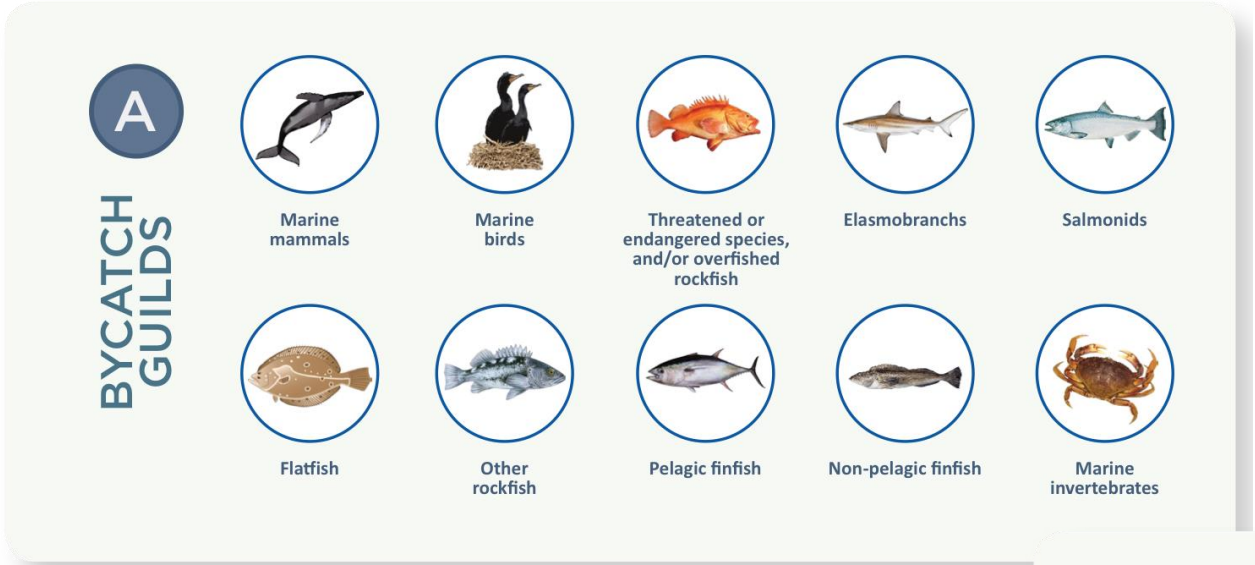


NOAA FISHERIES

INTEGRATED ECOSYSTEM ASSESSMENT

Slide courtesy of Jameal Samhouri (NOAA Fisheries)

We also assessed risk to bycatch and habitats



NOAA FISHERIES

INTEGRATED ECOSYSTEM ASSESSMENT

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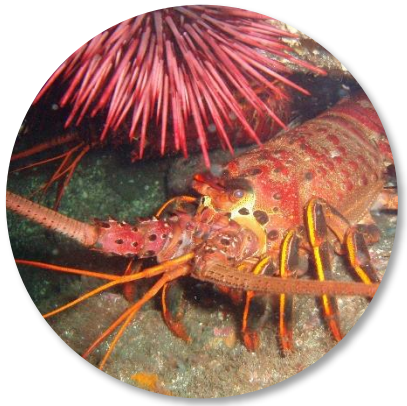
Co-development of the risk tool

- Project team consisted of California state scientists and managers, and NOAA Fisheries scientists
- Convened 2 workshops with fishermen, scientists, eNGOS to solicit feedback and recommendations

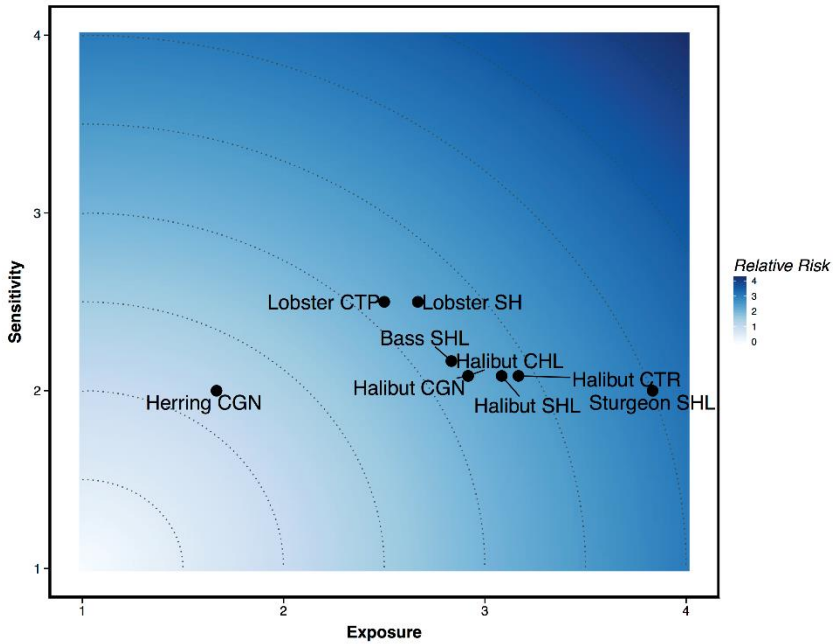


Screening tool to identify potential concerns

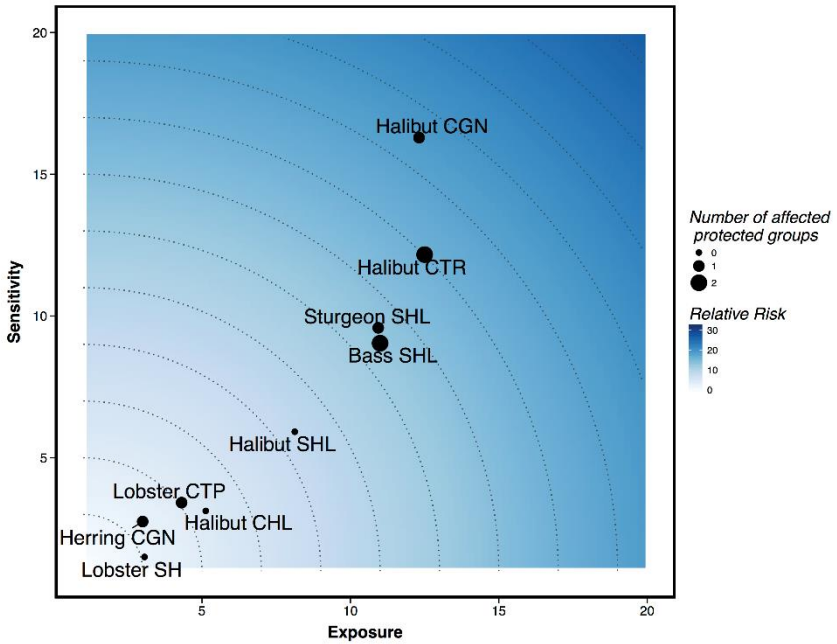
Fishery Key

CGN - commercial, gill net
CHL - commercial, hook & line
CTP - commercial, trap
CTR - commercial, trawl
SH - sport, hoop net
SHL - sport, hook & line

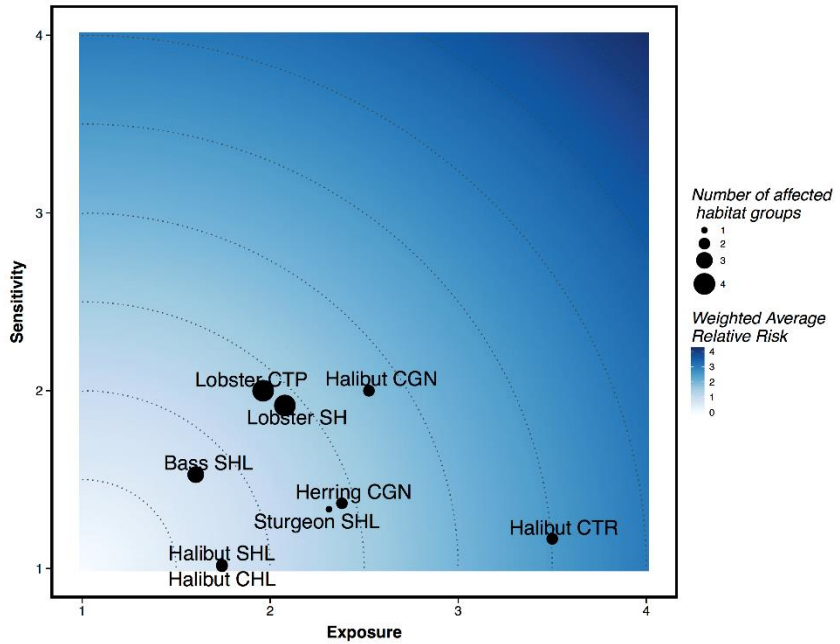
Risk to target species



Risk to bycatch



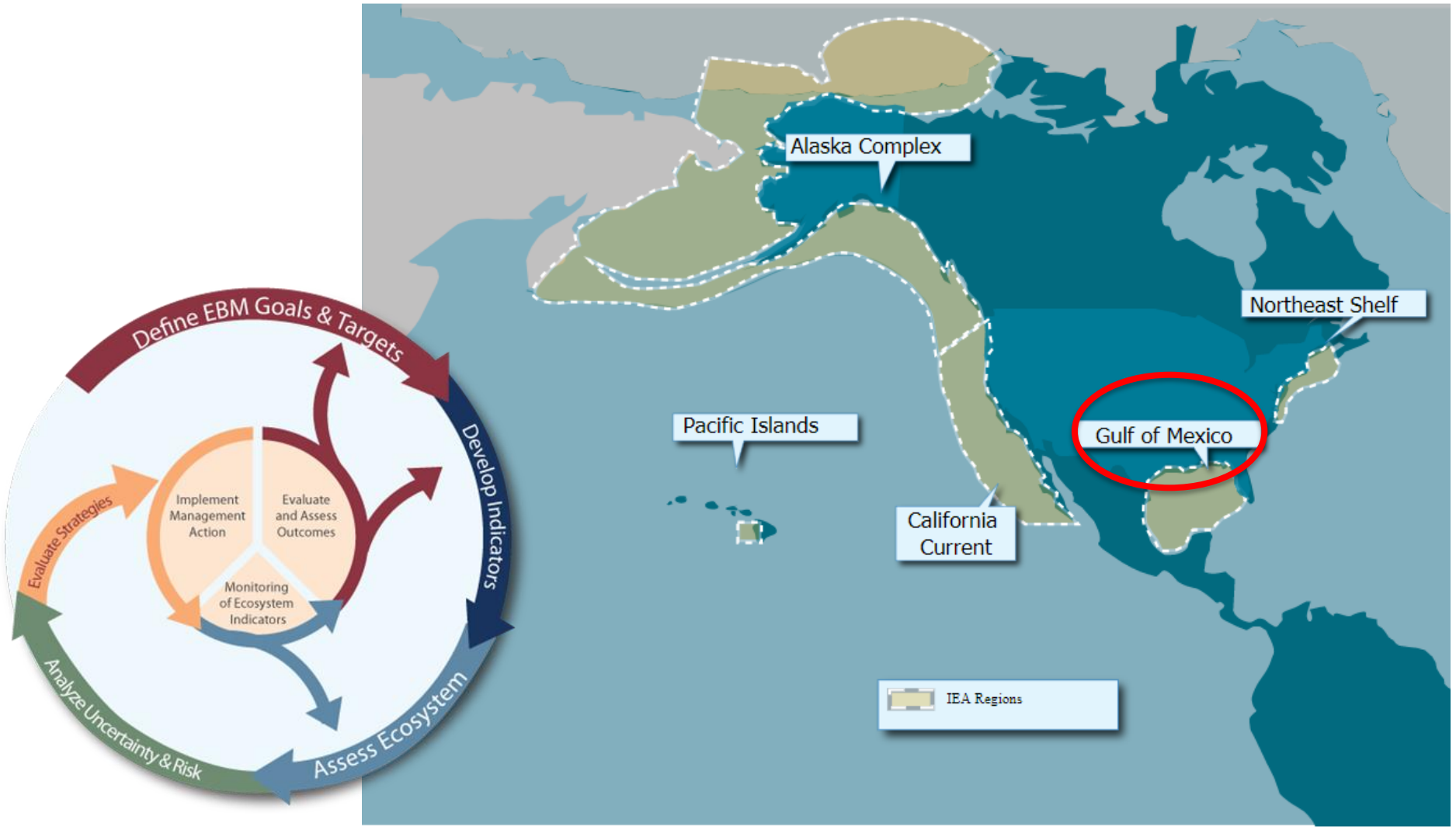
Risk to habitats



NOAA FISHERIES
INTEGRATED ECOSYSTEM ASSESSMENT

Slide courtesy of Jameal Samhouri (NOAA Fisheries)

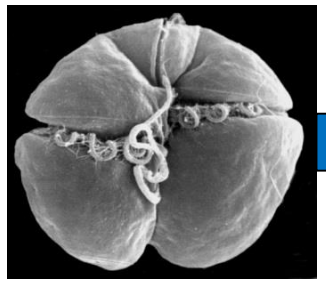
Implemented in 5 regions

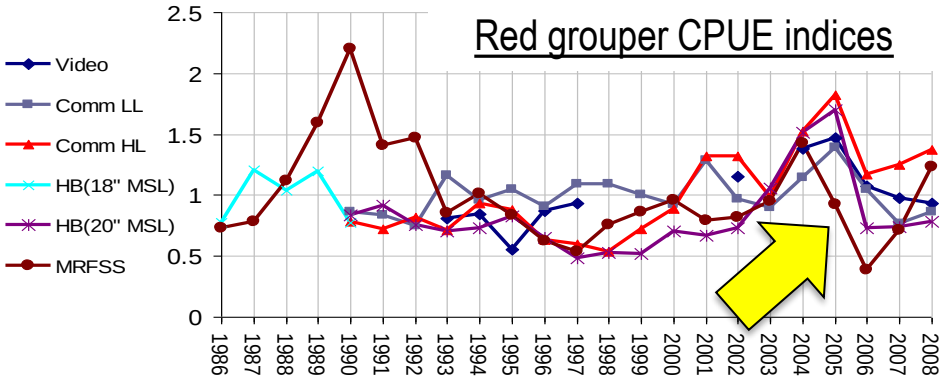


Gulf of Mexico IEA: coping with episodic mortality events

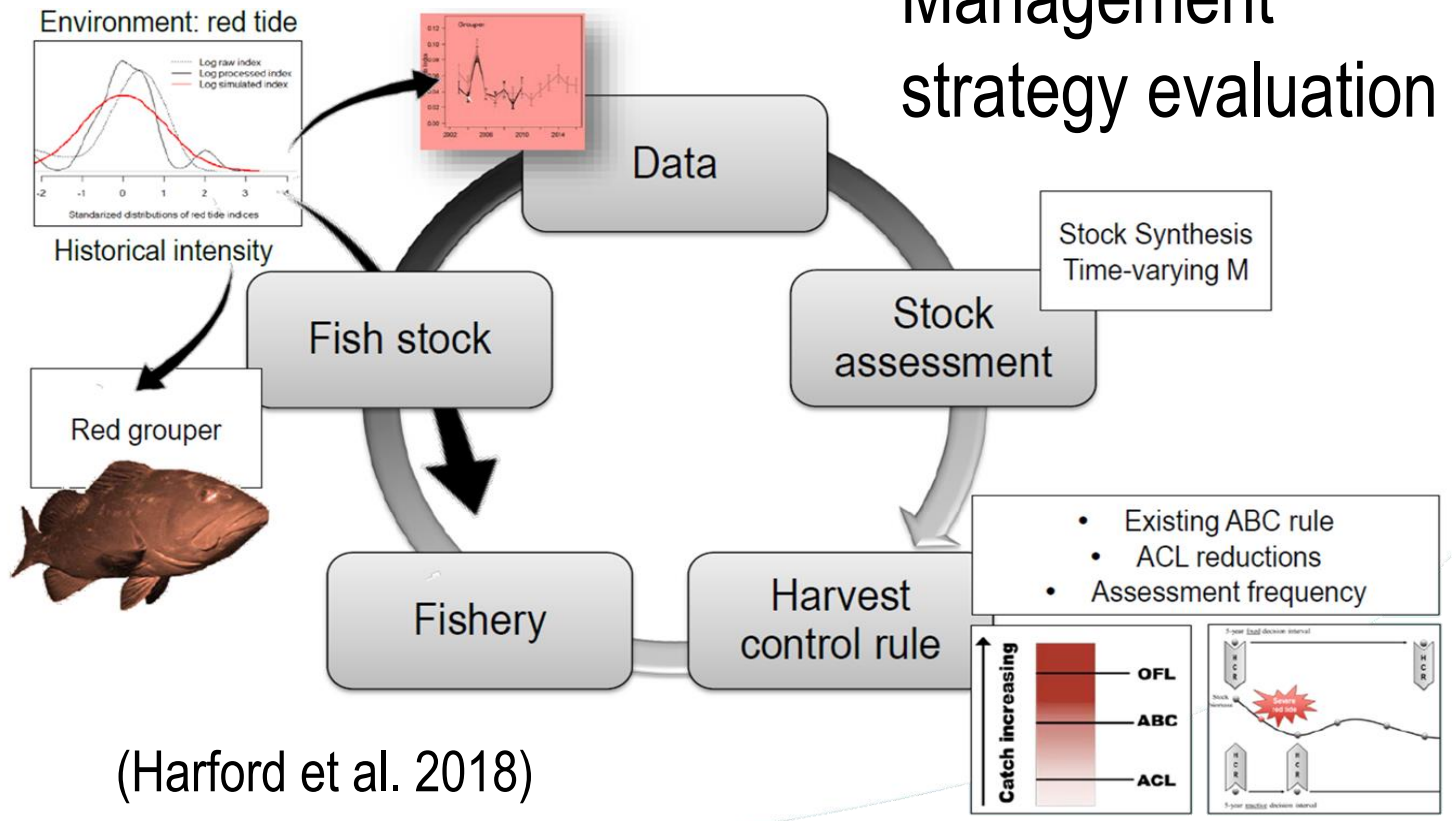
Are current harvest policies robust to possible future changes in frequency of “red tide” harmful algal blooms?

Karenia brevis
dinoflagellate





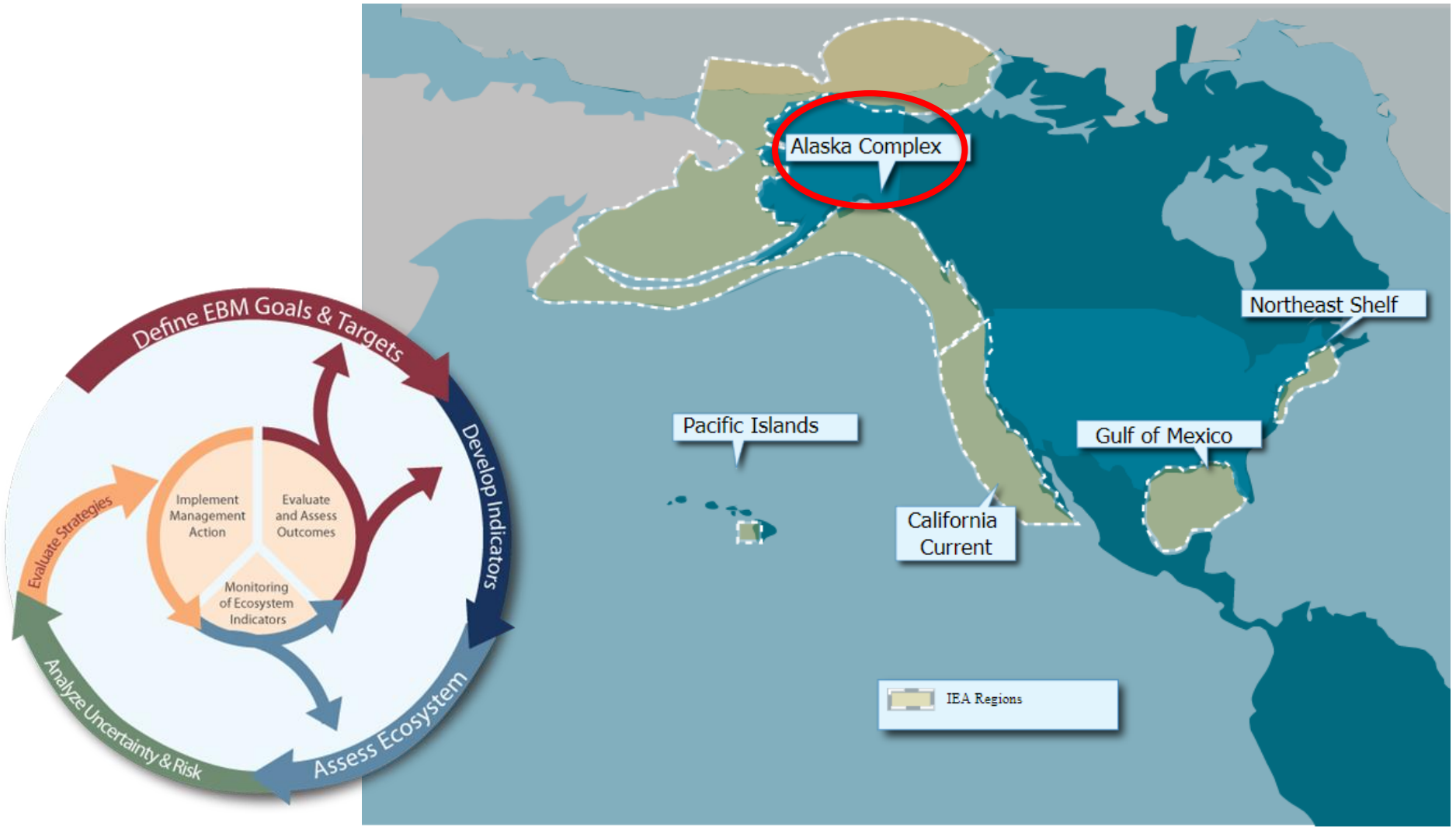
Management strategy evaluation



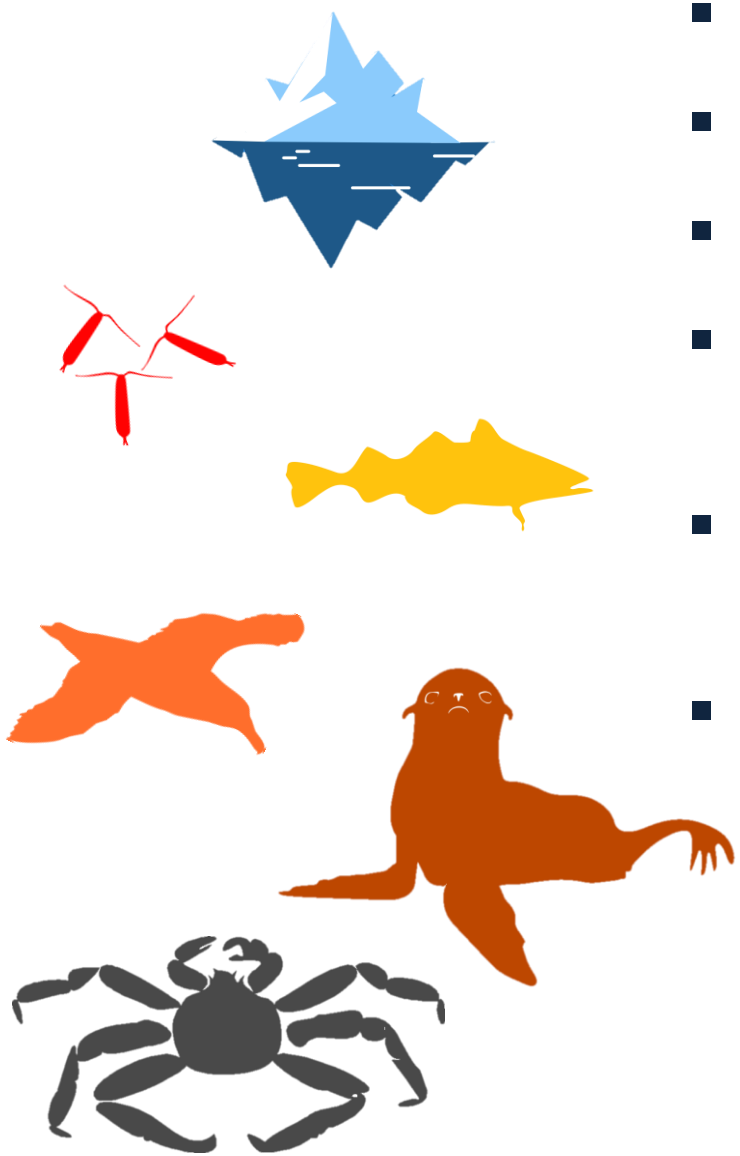
(Harford et al. 2018)

Slide courtesy of Mandy Karnauskas (NOAA Fisheries)

Implemented in 5 regions



2018 Bering Sea Walleye Pollock



- Lack of sea ice
- Low food abundance & quality
- Pollock biomass decreased
- Poor seabird reproduction and die-offs
- Fur seal pup production down at St. Paul; up at St. George
- Decrease in Red + Blue King Crab and Tanner Crab; increase in Snow Crab.

Warm conditions lead to reduced productivity and insufficient food resources

Example Risk Table 2018
EBS pollock

Assessment-related considerations	Population dynamics considerations	Environmental/ecosystem considerations
Retrospective analysis indicates no consistent biases in the assessment. The model tracks the available data well including multiple abundance indices. Of minor concern (presently) is the fact that the model estimate of declining abundance is somewhat less than that suggested by the survey data. **Conclusion: Level 1, No increased concerns**	Near term recruitment likely to be below average. Spawning population has low diversity of ages and the mean age of the spawning stock (weighted by spawning output) at relatively low levels. **Conclusion: Level 2, substantially increased concerns**	Unprecedented warm conditions in 2018 resulted in reduced production. Weak, delayed phytoplankton bloom, reduced biomass. Zooplankton prey base reduced. Unprecedented seabird die-off event and broad reproductive failures indicate insufficient prey resources **Conclusion: Level 2, substantially increased concerns**

Overall score is Level 2: Substantially increased concerns. Author's recommended ABC = 70% of maximum permissible (30% reduction)

NOAA

IEA

INTEGRATEDECOSYSTEMASSESSMENT

10 YEARS OF Integrated Ecosystem Assessment

https://www.integratedecosystemassessment.noaa.gov/