NOAA FISHERIES

Caribbean Ecosystem Status Report Update

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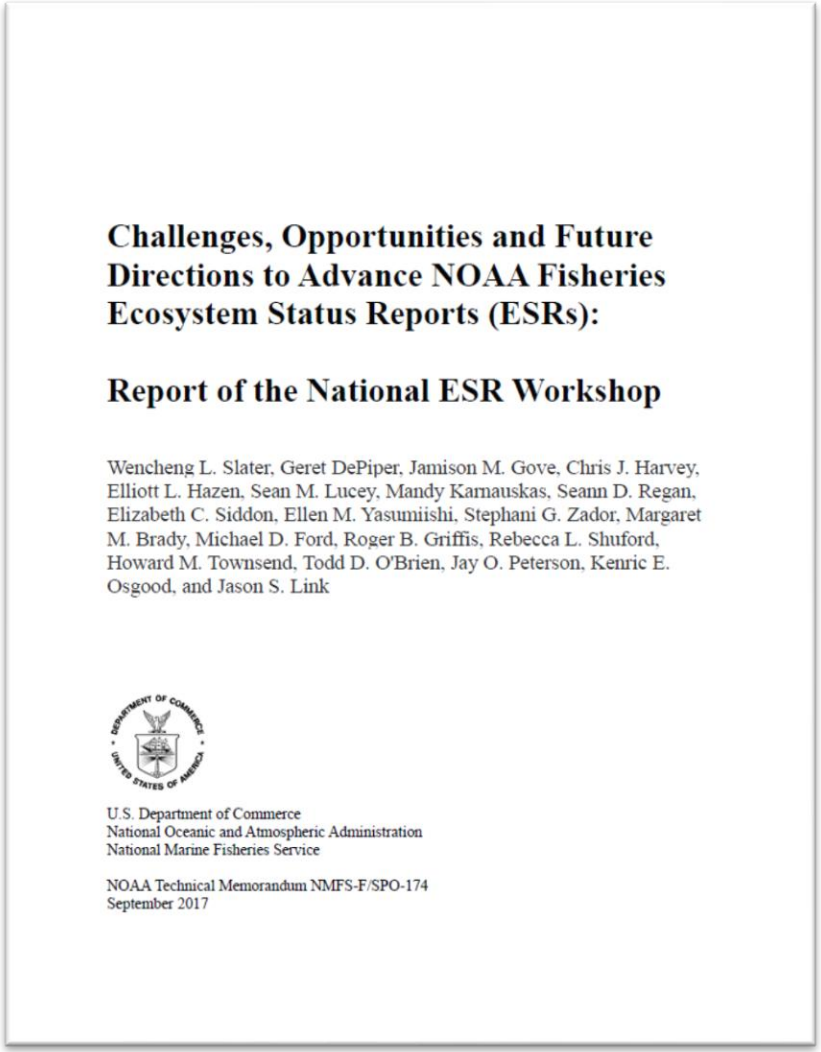
What is an Ecosystem Status Report?



Challenges, Opportunities and Future Directions to Advance NOAA Fisheries Ecosystem Status Reports (ESRs):

Report of the National ESR Workshop

Wencheng L. Slater, Geret DePiper, Jamison M. Gove, Chris J. Harvey, Elliott L. Hazen, Sean M. Lucey, Mandy Karnauskas, Seann D. Regan, Elizabeth C. Siddon, Ellen M. Yasumiishi, Stephani G. Zador, Margaret M. Brady, Michael D. Ford, Roger B. Griffis, Rebecca L. Shuford, Howard M. Townsend, Todd D. O'Brien, Jay O. Peterson, Kenric E. Osgood, and Jason S. Link

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-174
September 2017

"Ecosystem Status Reports (ESRs) are synthesized scientific products that provide information on the past and possible future conditions of marine ecosystems based on suites of indicators. This information provides vital context for a range of decisions affecting marine ecosystems and supports an ecosystem approach to marine resource management" (Slater et al. 2017).

What is an Ecosystem Status Report (ESR)?

- ESRs summarize status and trends in a suite of vetted indicators, and these reports provide a broad overview of the current state of the integrated social, economic, ecological, and physical components of an marine ecosystem.

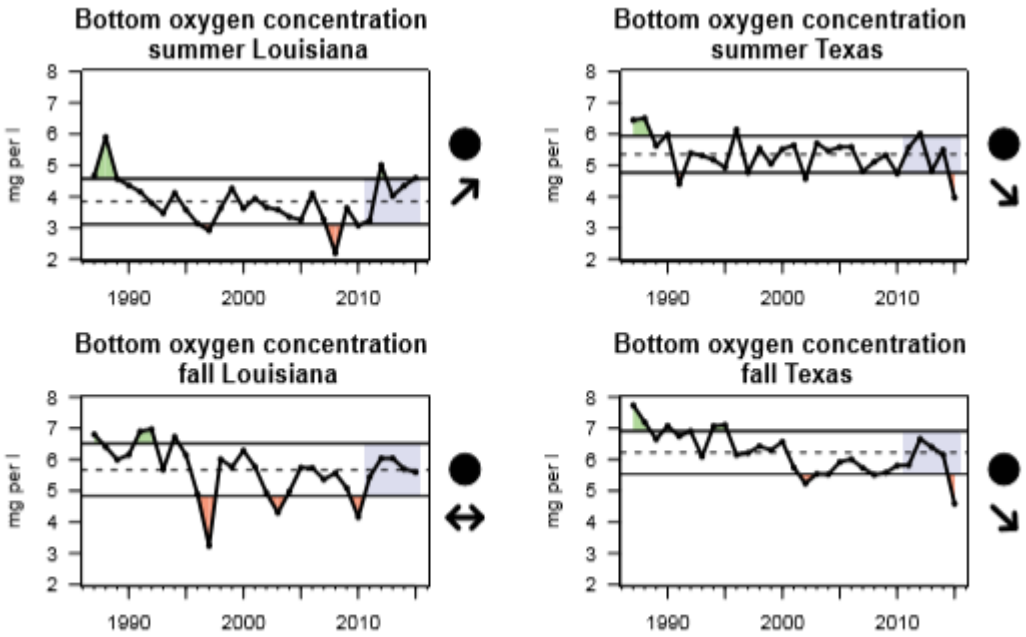
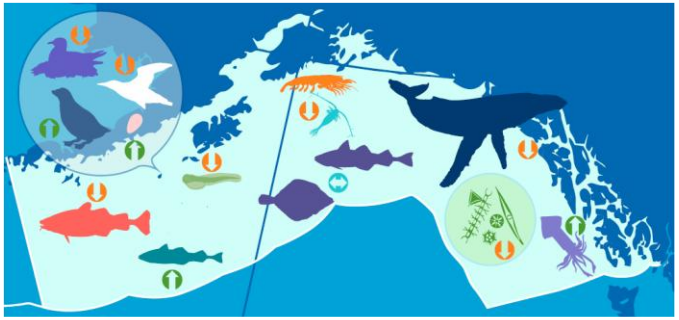


Figure 5.2. Average annual dissolved oxygen concentration values for the Louisiana (left) and Texas (right) coastal shelf, in summer (top) and fall (bottom).

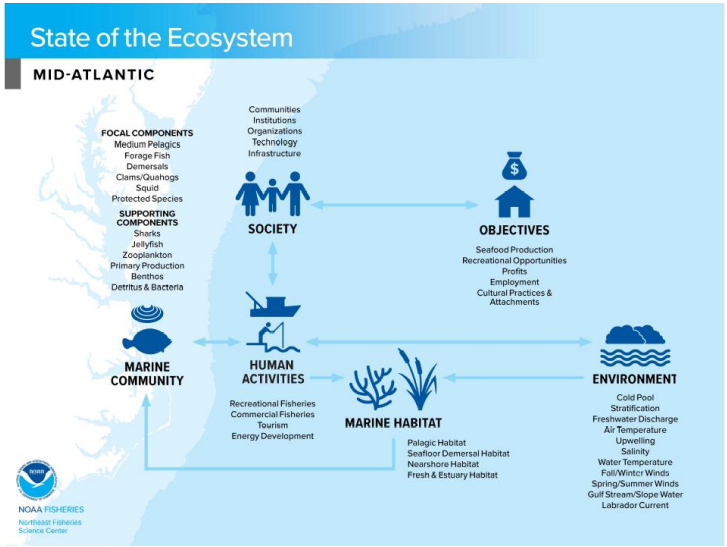
Figure 4.2.2 Cluster analysis of key forage species in the central CCE through 2018. Horizontal lines indicate clusters of typically co-occurring species. Vertical lines indicate temporal shifts in community structure. Colors indicate relative abundance (red = abundant, blue = rare).

How are they used in management?

NPFMC: single-species quotas set in context of ecosystem information

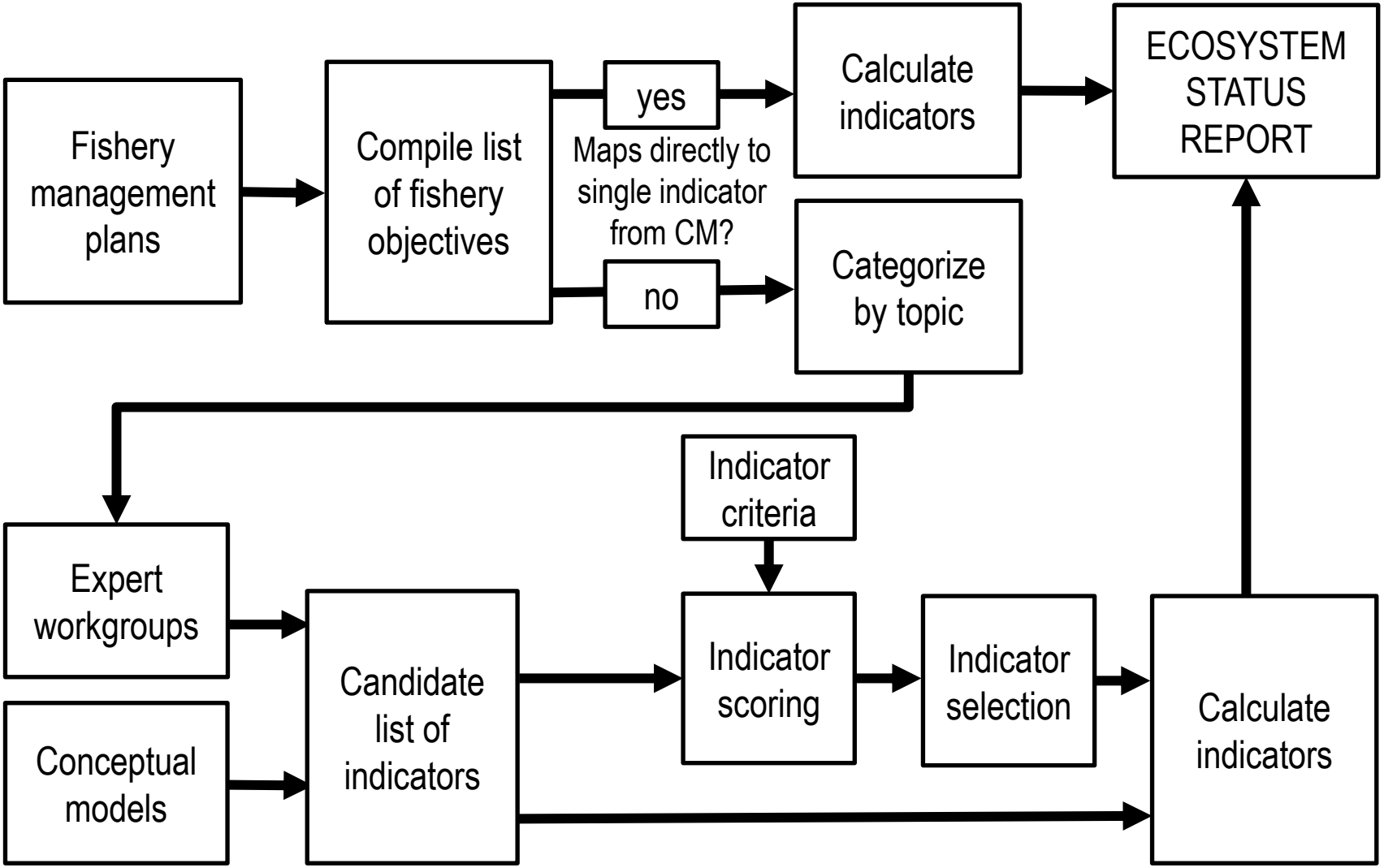


PFMC: Fishery Ecosystem Plan requires a yearly ESR describing status and trends, as context for decision-making



MAFMC: Indicators linked to specific management objectives

Proposed process for Caribbean ESR



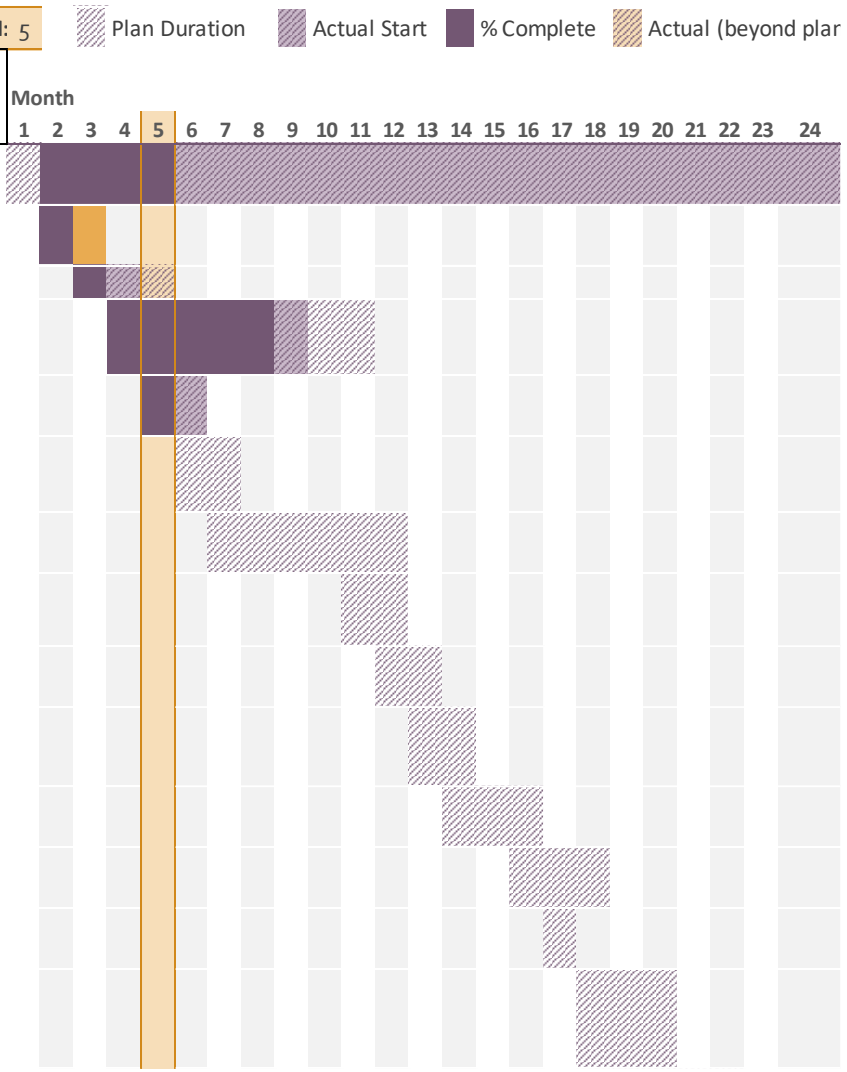
Indicator criteria

- Long term data availability
- Measurability
- Sensitivity to environmental changes
- Specificity
- Spatial and temporal scalability
- Relevance to FMP objectives
- Responsiveness to management actions

Timeline

Caribbean ESR Timeline

ACTION ITEM	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
KM begins as contactor on project (50% of time, so funding for 2 years)	1	24	2	24	20%
MK meets with SERO Caribbean Branch to discuss status of project	2	1	2	2	100%
collection and conceptual model progress data	3	2	3	3	50%
KM seminar on IEA and ESRs, NMFS Caribbean Branch, Council staff discussions on project goals and objectives, completion of data source list, expert list	4	8	4	6	90%
Present project to SSC/TAP and constituents, get feedback on potential indicators to be included	5	2	5	2	85%
Follow up: request experts, SSC to complete a decision matrix for top indicators per component and objectives for vetted indicator suite	6	2			0%
Data collection and formatting and plot/status and trends analysis	7	6			10%
Data collection and formatting and plot/status and trends analysis, possible travel to Council EBFM meeting/ SSC/ DAPs for check in on management	11	2			0%
Data collection and formatting and plot/status and trends analysis, begin writing report	12	2			0%
Multivariate "stoplight" analysis, cluster analysis, possible biplot analyses of connection of key indicators	13	2			0%
Write report, format report	14	3			0%
Format data collection library from project	16	3			0%
Presentation and communication of report and products to management bodies	17	1			0%
Adaptation of products (management strategy tradeoffs, spatial analysis, etc.) following feedback from Council and management bodies; plan made for periodic updates of report in key indicators	18	3			0%



Linkages to other ongoing efforts

- Conceptual models highlight key components of system; guide indicator selection
- ESR is synthesis/visualization of data that have already compiled through other efforts
  - EBFM working group data compilation
  - SEDAR data compilation
  - SEFSC data
  - Academic groups
  - Lenfest data compilation
- The Lenfest project's goals are to define and characterize ecological relationships via quantitative modeling in a "snapshot" sense, our ESR project will identify indicators matched with management objectives and analyze status and trends in a timeline sense. Can result in spin off projects for continued evaluation and management applications. Both plan to build on previous efforts for EBM.

How we envision ESR being used

- Allow managers to understand whether management objectives are being met
- Give broader ecosystem context (including physical, biological, social, economic) for decision-making
- Understand impacts of major acute stressors (e.g., coral bleaching events, hurricanes, COVID-19)

Questions

- Feedback on use of FMP objectives and conceptual models?
- Feedback on process- SSC and TAP may be tapped to provide potential indicators and use decision matrix to select
- Volunteers for expert working groups: physical/environmental, ecological/biological, social, economic
- Feedback on useful variables to measure impacts of events? (fish market sales, landings value, trip tickets?)

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SEFSC

Thanks!

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Extra slides- example decision matrix

- Used this method in the Florida Keys to quantify expert opinion

FKNMS Ecosystem Indicators Workshop Decision Matrix

Developed by Kelly Montenero and Chris Kelble

	Decision Criteria										
Decision Criteria	Long term data availability	Importance to Ecosystem & Culture (keystone, architect, poster-child)	Responsiveness to Environmental changes	Measurable-ness	Relevance to Sanctuary condition report Question 9- are other stressors affecting water quality?	Responsiveness to management actions		**Criteria Weights Menu**		**Indicator Options Score Menu**	
Set Criteria Weight	5	4	3	2	4	4	**Total**	1	less important criteria	0	Not suitable
Proposed Indicator 1							0	2		3	Low
Proposed Indicator 2							0	3		6	Mid
Proposed Indicator 3							0	4		9	High
Proposed Indicator 4							0	5	important criteria		
Proposed Indicator 5							0				

Project Weighting - Project weights for each criteria should be 0 (Not suitable), 1 (Low), 3 (Mid), 9 (High)