

California Current Ecosystem-Based Management (CCEBM) initiative:
Advancing the Science for Ecosystem-Based Management on the U.S. West Coast
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SYNTHESIS FROM BREAKOUT SESSION 1

The purpose of the first breakout session was to evaluate and consider applications for emerging approaches to organize and assess scientific information to inform EBM. One approach, the Integrated Ecosystem Assessment (IEA), is being developed by NOAA. The IEA aims to help synthesize and analyze relevant scientific information needed for an ecosystem approach to management. On the West Coast, IEAs are being developed for Puget Sound and the California Current as a whole. A second, complementary approach, Science to Inform Ecosystem Service Tradeoff Analysis (SIESTA), under development by the CCEBM Science Advisory Committee, works within the IEA framework. SIESTA is a means for understanding how social and ecological factors affect the delivery of key ecosystem services. It helps in defining and visualizing the relationships and potential trade-offs among the delivery of these services, and in selecting among alternative management strategies.

The following represents a compilation of discussions from all nine breakout groups, each asked to consider the same set of questions. This document presents highlights from across the range of opinions raised during the breakout group discussions, and thus it does not constitute a consensus opinion among the attendees.

TOPIC 1: Evaluation

(1) What are your initial reactions to these approaches?

- Reactions to IEA
 - Role:
 - Assesses the status of the ecosystem relative to some baseline (analogous to a fisheries stock assessment, but for the entire ecosystem rather than for a single species).
 - Not a decision-making tool, but rather a broad, logical, holistic framework.
 - Initial steps of IEAs are useful for transparency and consensus building among stakeholders.
 - Application:
 - May be useful for other agencies, beyond NOAA, to apply this approach.
 - Should be motivated by specific management questions or needs.

- Reactions to SIESTA

- Role:
 - Because people want many services, and in many cases they cannot get as much of them as they may like, we need a method like SIESTA to evaluate the tradeoffs.
 - Helps reveal counterintuitive interactions among services and impacts of management choices, potentially revealing a broader (or different) range of management options and thus better informing management decisions.
- Application:
 - May be too theoretical to be useful in practice by managers, practitioners or policymakers.
 - Using SIESTA requires an understanding of the factors generating services before assessing tradeoffs.
 - Production models that are used to estimate the amounts of services that can be provisioned by the ecosystem require accurate parameters, weights and criteria.
 - SIESTA assumes goal of an optimal management solution, but this may be a false assumption, and it may be difficult to agree on what is “optimal.”

(2) How could these approaches be modified or improved?

- Improvements to IEA:

- Make IEA spatially explicit.
- Incorporate cumulative impacts, possibly using an approach adopted by the European Environment Agency: Driving forces, Pressures, States, Impacts and Responses (DPSIR).

- Improvements to SIESTA:

- Constrain the range of combinations of services that are considered (e.g., might want to take some options off the table if they compromise the system too much).
- Incorporate dynamics, including how services change over the near- and long-term, and what the costs are for achieving more optimal service delivery.
- Change confusing terminology: e.g., “efficiency frontier” leads to a range of interpretations – possibly call it a “policy frontier.”
- Needs to be more user-friendly.

(3) Do these approaches appear to be complimentary, redundant or contradictory? In what ways?

- These approaches are complementary; the IEA puts SIESTA into context and shows where in the process to evaluate tradeoffs.
- Need clarification on how the two are linked. Specifically, SIESTA may play a role during phases other than management strategy evaluation.

(4) What are the anticipated benefits of the approaches?

- Benefits of IEA:

- Tracking indicators relative to benchmarks will trigger management actions.
- Tool for identifying data gaps, while still moving forward with EBM.

- Benefits of SIESTA:
 - Allows examination of sectors or services that are not measured in the same unit (axes do not need to be dollars).
 - Tool for revealing promising areas for additional research by identifying elements of uncertainty.
 - Role in decision-making process:
 - Reduces conflicts among user groups, providing a means for stakeholders with divergent goals to look at their differences.
 - Adds transparency to the decision-making process.
 - Eliminates time arguing over management decisions that may not serve the best interests of any stakeholder groups (i.e., management scenarios for which there are more optimal solutions).
 - Can reveal whether or not there is actually a tradeoff between services.

TOPIC 2: Application

(1) Are these approaches feasible for real world application?

- General comments:
 - Managers and decision-makers need incentives to apply tools like IEA and SIESTA.
 - Need to address the issue of how spatial scales fit together and how to scale-up from small scale to regional EBM efforts.
- Application of SIESTA:
 - Not at the “turn the crank” stage, but if refined, it is likely a feasible approach for real-world application.
 - May be better for regional decisions than smaller-scale decisions.
 - May be better for setting general policies (e.g., amount of shoreline armoring versus eelgrass habitat), rather than specific management actions.
 - May be most useful for “hypothesis testing” within an adaptive management scheme.

(2) What are some key barriers and opportunities to applying these approaches?

- General Barriers:
 - Challenging to apply these approaches at the scale of the CCLME when there is not a management entity operating at this scale. Requires institutional change or better coordination across agencies.
 - Analyzing tradeoffs among services may not ensure that we achieve a productive, resilient ecosystem. This approach may balance sectors, but not the ecosystem.
- Barriers for IEA:
 - The IEA needs to be tested for offshore areas to see if it works as well as it does for nearshore areas.

- Barriers for SIESTA:
 - SIESTA may not be accessible to a broad audience. For example, it may be difficult for a diverse group of stakeholders to understand tradeoffs among more than two services.
 - To make SIESTA a transparent approach, stakeholders must be able to at least partially understand how the information is generated.
 - Data/model needs:
 - Determination of important model criteria.
 - Development of methods for distinguishing between tradeoffs among services versus non-interacting services.
 - Development of methods for valuing and quantifying services.
 - There may be institutional barriers to achieving a management option that leads to a lower tradeoff among services.
 - Accounting for perceptions about services that are difficult to quantify or shaped by a degraded rather than the potential state of the ecosystem.
- Opportunities for IEA:
 - NOAA working groups could benefit from adding state and local partners.
 - West Coast Governors' Agreement calls for an IEA workshop (Fall 2008).
- Opportunities for SIESTA:
 - Reveals scientific information needs for implementing EBM: ask different sectors or stakeholder groups to assess what they think the relationships between pairs of services look like. Situations where there are mismatches across groups could be targeted for additional research and data collection.
 - Might be useful for retrospective analysis of past management decisions to reduce uncertainty and improve future decision-making.

(3) Who is likely to apply SIESTA?

- Those aiming to implement multi-sector or multi-service EBM.
- Stakeholder groups:
 - Help to assess service tradeoffs when we lack perfect knowledge of the interactions (e.g., reduce error bars with stakeholder knowledge).
 - Use as an outreach tool, particularly at the local level, to sharpen perceptions of problems and solutions.

(4) How would the application of SIESTA differ in situations with limited information versus in information-rich areas?

- Utility depends not on data richness, but rather on whether or how a decision will be made using the available information.
- Analysis of service tradeoffs can be done using models of differing complexity depending on the information available: use conceptual models or more elaborate quantitative models depending on data availability.
- In data poor situations, it may be useful just to know the shape of the relationship between pairs of services.
- Data-limited situations may be supplemented with easy-to-collect surrogates or indicators.