

Use Case: Collating Best Available Science and Identifying Knowledge Gaps

<http://bit.ly/NI-ESCM>

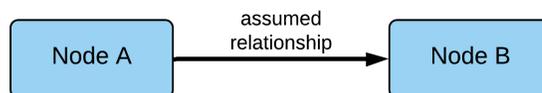
CONTEXT

Restoration funders and program managers in the Gulf of Mexico are interested in better incorporating social and economic outcomes into their selection and assessment of restoration projects and programs. One type of restoration of interest across all gulf states is oyster reef restoration. In order to understand the connection between oyster reef restoration and social and economic outcomes a general oyster reef restoration Ecosystem Services Conceptual Model (ESCM) for the Gulf of Mexico was built. A literature review was conducted to collect evidence for every link in the model providing a better understanding of which social and economic outcomes were strongly linked to the restoration action, which pathways from restoration to socioeconomic outcomes are most significant, and where key knowledge gaps exist.

PROCESS

Using expert input and a literature review, an evidence library entry for each linkage (arrow) in the Gulf of Mexico oyster reef ESCM was created. Each entry contains:

- **A description of the relationship** between the two nodes (boxes). This starts as an assumption, but it can become an evidence-based description through development of the library and assessment of evidence.



- **A summary** of the evidence found relating to the assumed relationship between two nodes.
- **A list of other factors** that may result in variation (location, timing, external drivers, and so on) in direction or magnitude described relationship.
- **A summary of confidence** in the described relationship given available evidence.
- **A list of evidence resources.**

In addition, a strength of evidence map (Figure 1, see page 3) was created using the confidence summaries for each linkage. This map displays the arrows of the ESCM color-coded to correspond to the strength of evidence available for each linkage to highlight knowledge gaps.

RESOURCES USED

Oyster Reef ESCM. A general oyster reef ESCM for the Gulf of Mexico was used as the framework for the evidence library.

APPLICATIONS

Providing best-available science summaries for each link in the model. The evidence library makes scientific information about each linkage in an ESCM easily accessible.

Understanding which outcomes are strongly linked to an intervention. Using evidence summaries and the strength of evidence map it is possible to examine which outcomes are most likely to be significantly impacted by a particular oyster reef restoration project.

Refining the ESCM. Evidence review and expert engagement required to develop an evidence library help refine and improve an existing ESCM; understanding the system better and synthesizing information about connections in the system can lead to model updates.

Identifying uncertainties or knowledge gaps. The strength of evidence map (Figure 1), created using the strength of evidence scores assigned to each linkage, can illustrate knowledge gaps informing project design decisions, future research, and monitoring priorities.

Determining what is known about direction and magnitude of hypothesized relationships. Where information was available, summaries about the direction and magnitude of the relationship between nodes (boxes) are provided in the evidence library entries. This information can help restoration practitioners know what to expect about the direction and magnitude of changes to different aspects of the system.

ADDITIONAL RESOURCES

Warnell, K., R. Karasik, S. Mason, A. Zhao, S. Sharma, and Cl. Sandoval. 2019. "[Evidence Library for Oyster Reef Restoration in the Gulf of Mexico.](#)" Nicholas Institute for Environmental Policy Solutions. Durham NC: Duke University.

