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Fishery Ecosystem Plan

Gulf Council

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ABBREVIATIONS USED IN THIS DOCUMENT

CRP	Cooperative Research Program
EAFM	Ecosystem Approaches to Fisheries Management
EBFM	Ecosystem Based Fisheries Management
ETC	Ecosystem Technical Committee
FEP	Fishery Ecosystem Plan
FEI	Fishery Ecosystem Issues
FMP	Fishery Management Plan
Gulf	Gulf of America
Council	Gulf Fishery Management Council
LGL	LGL Ecological Research Associates, Inc.
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MSE	Management Strategy Evaluation
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OETC	Outreach and Education Technical Committee
RFMC	Regional Fishery Management Council
RFP	Request for Proposals
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SSC	Scientific and Statistical Committee

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CHAPTER 1. INTRODUCTION

1.1 National Ecosystem Guidance

The National Marine Fisheries Service (NMFS) has enacted policies and procedures designed to prevent overfishing and rebuild overfished stocks with stringent timelines that have reversed the downward trend for many of the nation's most valuable federally managed fishery stocks. This progress can largely be attributed to a conventional approach that focuses on the management of single stocks, as mandated by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the National Standard Guidelines that were developed after the 2007 reauthorization of the Magnuson-Stevens Act. However, NMFS has long acknowledged the need to explicitly incorporate ecological concepts into the nation's living marine resource management approaches to address fisheries holistically within their broader ecosystem context (Evans et al. 1987).

Toward that aim, NMFS has adopted an Ecosystem Based Fisheries Management (EBFM) policy to recognize the interconnectedness of ecosystem components and the need to address climate and ecosystem impacts on the living marine resources that it manages. The policy, which was put into effect in 2016 and updated in 2024, defines Ecosystem Based Fisheries Management as "a systematic approach to fisheries management in a geographically specified area that: contributes to the resilience and sustainability of the ecosystem; recognizes the physical, biological, economic, and social interactions among the affected fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals" (NMFS 2016, 2024a).

To implement Ecosystem Based Fisheries Management, NMFS anticipates the need to support its management partners, including the Regional Fishery Management Councils, in ecosystem-level planning and identifying avenues to incorporate ecosystem considerations into management advice (NMFS, 2024b). The NMFS guidance for Ecosystem Based Fisheries Management implementation acknowledges that regional ecosystem management approaches will likely vary, and that ecosystem-oriented goals and objectives will need to be developed at the regional level to meet distinct regional needs. The aim of this document is to facilitate progress toward Ecosystem Based Fisheries Management implementation in the Gulf of America[1] (Gulf) by outlining an actionable framework to incorporate broader ecosystem issues and interactions into the Gulf Fishery Management Council (Council) decision making process.

1.2 Development of the Gulf Fishery Ecosystem Plan

The Council began formally working toward ecosystem goals within the fishery management process in 2004 when it established the Ecosystem Science and Statistical Committee (SSC). Since then, the Council has made significant progress toward the incorporation of broader

[1] The Gulf of Mexico was renamed the Gulf of America pursuant to Executive Order 14172, and Secretary of the Interior Order No. 3423. Documents and references that predate the Executive Order retain their original nomenclature.

ecosystem processes into existing management practices. Most notably, episodic mortality driven by red tide events are included in gag and red grouper stock assessments to better account for the impacts of environmental influences on population dynamics (SEDAR 72 2021; SEDAR 88, 2025; Sagarese et al. 2015). The Ecosystem SSC has since been incorporated into the primary SSC body in recognition of the continuing need for ecosystem expertise in the science to management processes. However, the Council's ecosystem efforts thus far have been implemented on an ad hoc basis without the overarching structure of a Gulf Fishery Ecosystem Plan (FEP) to guide the use of ecosystem information in Gulf fisheries management.

The Council recognized the need for strategic planning to advance ecosystem goals and objectives within Gulf fisheries management and established the Ecosystem Technical Committee (ETC) in 2020 as an advisory body to guide the development of a Gulf Fishery Ecosystem Plan. In 2021, the Council contracted LGL Ecological Associates, Inc. (LGL) to develop a Gulf Fishery Ecosystem Plan with the explicit request for the Fishery Ecosystem Plan to be centered around actionable ecosystem guidance. The contract included the primary deliverable, *Gulf of Mexico*[2] *Fishery Ecosystem Plan: Version 1.0* (LGL 2022), and three supporting deliverables: *Case Studies and Lessons Learned from Fishery Ecosystem Planning* (Heyman et al. 2021); *Indicator Development for Fishery Ecosystem Planning: Summary Report* (LGL 2021); and *Stakeholder Assessment and Concept Mapping in support of Fishery Ecosystem Planning for the Gulf of Mexico*[2]*: Summary Project Report* (Scyphers et al. 2021).

Gulf Fishery Ecosystem Plan Version 1.0 (LGL 2022) was accepted by the Council in 2022 as a foundation to begin discussions and operationalize future Fishery Ecosystem Plan strategies and is the conceptual basis for this document. Under the Council's direction, the ETC and the Council's Outreach and Education Technical Committee have contributed to discussions on refining the processes and procedures introduced in *Gulf Fishery Ecosystem Plan Version 1.0*, operationalizing the outlined ecosystem approaches, and developing plans to engage stakeholders in the process. The remainder of this document is the culmination of this ongoing work and describes the Council's efforts to systemize ecosystem considerations into Gulf fisheries management.

1.3 Goals of the Fishery Ecosystem Plan

As proposed by the Ecosystem Technical Committee, the mission statement for the Fishery Ecosystem Plan is:

> "*To provide a structured process for integrating ecosystem science into the Gulf Fishery Management Council's decision making for long-term ecological, social, and economic sustainability of Gulf of America*[2] *resources."*

This vision aligns with the recommended goal for next-generation Fishery Ecosystem Plans to focus on 'triple bottom line' sustainability of fishery systems, which focuses on the need to

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balance three key areas of performance to achieve long-term fishery management goals – environmental, economic, and social (Marshall et al. 2018). The triple bottom line approach aims to improve environmental, economic, and social outcomes by promoting healthy and resilient marine ecosystems while supporting fisheries-dependent economies and creating conditions that maintain access to fisheries resources and support thriving coastal communities. To make progress toward meeting this triple bottom line goal, this Fishery Ecosystem Plan aims to provide structured, actionable guidance for incorporating ecosystem considerations into Gulf fisheries management.

Ecosystem Based Fisheries Management principles have yet to be widely adopted in U.S. fisheries management because the overarching goals often lack actionable guidance and the identification of specific, realistic projects (Levin et al. 2018). The Council recognizes that true Ecosystem Based Fisheries Management, which attempts to manage fisheries ecosystems as a whole with ecosystem-level reference points and integrated management advice across multiple stocks (Patrick and Link 2015), is a long-range goal. Given the limitations in data available in the Gulf to support ecosystem-wide implementation, this long-range goal is presently out of reach. Instead, this Fishery Ecosystem Plan is meant to be an informational document to outline the Council's approach to adopting Ecosystem Approaches to Fisheries Management (EAFM), which aims to include consideration of ecosystem factors to inform and enhance fisheries management within the current single stock paradigm and existing Fishery Management Plans (FMPs) and their regulatory processes. By defining actionable processes and procedures to systematically consider regional ecosystem issues, the Council aims to advance ecosystem-informed decision-making in Gulf fisheries management.

CHAPTER 2. GUIDING PRINCIPLES AND OVERARCHING CONCEPTS

2.1 Fishery Ecosystem Plan Principles

In U.S. fisheries management, Fishery Management Plans are the statutorily required instrument to meet the Magnuson-Stevens Act objectives to prevent overfishing, rebuild overfished stocks, increase long-term economic and social benefits, and ensure the sustainability of fish stocks. In contrast, Fishery Ecosystem Plans are non-legally binding tools to operationalize Ecosystem Based Fisheries Management and are intended to guide the use of broader ecosystem information in the context of regulatory documents such as Fishery Management Plans. Early Fishery Ecosystem Plans were largely descriptive, providing comprehensive overviews of the biophysical components of regional fisheries systems with few links to management.

To provide guidance on how to better use Fishery Ecosystem Plans to translate Ecosystem Based Fisheries Management principles into action, the Lenfest Ocean Program formed a Fishery Ecosystem Task Force to identify approaches to overcome the challenges to Ecosystem Based Fisheries Management implementation (Essington et al. 2016). The task force recommended that next-generation Fishery Ecosystem Plans follow a proposed "Fishery Ecosystem Plan Loop" to create a structured process for establishing strategic objectives and implementing plans while building in opportunities to evaluate, learn, and adjust as necessary (Figure 2.1.1).

One of the major roadblocks to Ecosystem Based Fisheries Management and Fishery Ecosystem Plan success is the overwhelming complexity of attempting to manage fisheries ecosystems when understanding the dynamics of single stocks already poses considerable challenges. This Fishery Ecosystem Plan aims to adapt the principles of the proposed next-generation Fishery Ecosystem Plan Loop on a more specific and tangible scale to increase the utility of the Fishery Ecosystem Plan in informing Gulf fisheries management. This Fishery Ecosystem Plan centers around the concept of the Fishery Ecosystem Issue (FEI), defined in section 2.2, as the functional unit for Fishery Ecosystem Plan implementation. By focusing on FEIs and adopting an FEI Loop (Chapter 3) modeled after the next-generation Fishery Ecosystem Plan Loop as the mechanism to systemize Ecosystem Approaches to Fisheries Management, the Council aspires to make progress along the continuum of Ecosystem Based Fisheries Management toward a more holistic approach to sustaining resilient Gulf fishery ecosystems.

Figure 2.1.1 The next-generation Fishery Ecosystem Plan Loop describes a structured, adaptive planning process for establishing goals and translating them into action (Essington et al. 2016).

2.2 Fishery Ecosystem Issues

Fishery Ecosystem Issues (FEIs) will form the primary structured planning process by which this Fishery Ecosystem Plan is implemented. The FEI concept is modeled after the "Ecosystem Initiatives" adopted in the Pacific Coast Fishery Ecosystem Plan (PFMC 2022) and the "Action Modules" in the Bering Sea Fishery Ecosystem Plan (NPFMC 2019), each designed to dedicate focus to specific prioritized ecosystem topics with the aim of enhancing Council decision-making processes. The Ecosystem Initiatives and Action Modules initiated in other regions have taken 1-4 years to complete, operating on a more immediate and practical timeframe than the next-generation Fishery Ecosystem Plan Loop which may take a decade to fully realize

(Essington et al. 2016). Similarly, FEIs are structured, action-oriented planning processes that address specific fisheries issues on a relatively short timeframe.

Fishery Ecosystem Issue (FEI) combines three terms, defined individually as follows:

Fishery: A system wherein marine resources are harvested for commercial or recreational purposes. The system consists of linked biophysical and human subsystems with interacting ecological, economic, social, cultural, and institutional components.

Ecosystem: A defined geographic area or system that encompasses biotic and abiotic components, including humans, their interactions, and the associated direct and indirect benefits the system provides.

Issue: An important topic or problem that could potentially be addressed through Council action.

An FEI is a specific fishery management concern that occurs within the Gulf region and extends beyond the conventional single stock management paradigm. In principle, FEIs originate from stakeholder concerns arising from on the water observations of changes to the abundance or distribution of fish species, environmental observations, or other unusual ecosystem patterns. An FEI should address issues that impact important fishery resources and have a high level of stakeholder interest. Additionally, an FEI should have a high probability of generating actionable guidance given focused Council attention and can lead to recommendations that support triple bottom line benefits to Gulf fishery systems. The processes and procedures for identifying, investigating, and evaluating FEIs are described in Chapter 3, including details of the FEI Loop structure.

2.3 Prioritizing Fishery Ecosystem Issues

To streamline Fishery Ecosystem Plan progress and to ensure that the initiatives that the Council works on are targeted and intentional, FEIs will need to be prioritized. While all FEIs that arise from stakeholder concern will receive consideration, the Council has finite resources and should select FEIs to explore based on the FEI's applicability to Gulf fisheries management. Criteria for prioritizing FEIs may consider the scope of the problem, including the number of affected species/resources, the geographic scale of the FEI, and the magnitude of stakeholder impact. Prioritization efforts may also consider the urgency of the issue and whether there are pathways to Council actionability within a reasonable timeline. The ETC will be responsible for prioritizing FEIs and recommending FEIs to the Council. It will ultimately be at the discretion of the Council whether to initiate work on an FEI, which may be dependent on resource availability and the action schedule for ongoing Council proceedings in addition to FEI priority.

2.4 Addressing Extra Jurisdictional Issues

Ecosystems are broad and interconnected by nature, and many of the ecosystem pressures that threaten to negatively impact Gulf fishery resources originate outside of the federal waters of the Gulf (e.g., coastal development, upland sources of pollution, climate change). Although the Council works closely with the five Gulf states and each state marine resource director has a voting seat at the Council table, the Council only has the authority to manage federal fisheries in the Gulf. Therefore, FEIs should be approached through the Council lens to identify recommended actions to address FEIs within the fisheries management process. However, as FEIs are developed issues may be identified that cannot be resolved by Council action alone and would benefit from interagency collaboration to address extra jurisdictional issues. In such cases, the Council may seek to request cooperation or make formal recommendations to other agencies regarding specific issues or actions. Through the FEI Loop process (Chapter 3), FEIs should identify any need for extra jurisdictional action and clearly outline what the FEI aims to achieve with this interagency communication or cooperation that could not be accomplished with Council action.

CHAPTER 3. PROCESSES AND PROCEDURES

3.1 Identifying Fishery Ecosystem Issues

FEIs may originate from the observations and concerns of Gulf fishery stakeholders, from Council advisors (Scientific and Statistical Committee, Advisory Panel, or Technical Committee members), or from Council members. As an ecosystem concern gains attention and begins to affect an increasing number and diversity of stakeholders, the seeds of an FEI may organically gain traction through Public Comment, the Council's Fisherman Feedback Tool, or other avenues of Council communication. However, to build a list of potential FEIs to initiate the Fishery Ecosystem Plan, the Council will engage with a social science consultant to gather stakeholder-driven FEIs using a structured approach such as concept mapping or focus groups. The aim of this initial structured FEI identification process is to populate a comprehensive list of ecosystem concerns for Council consideration with representation from a diversity of Gulf stakeholder groups. The initial FEI identification process will be supplemented with FEIs solicited from additional Gulf fishery stakeholders via an online submission tool.

Prospective FEIs will be housed in Appendix A to the Fishery Ecosystem Plan, which will be a living document that tracks completed, ongoing, and prospective FEIs. Each prospective FEI in Appendix A will be accompanied by an FEI description (Figure 3.1.1) which outlines the scope of the ecosystem concern. As ecosystem conditions change and new concerns emerge, it may be necessary for additional FEIs to be appended to the list. New FEIs may be recommended by stakeholders or Council advisors, and addition to the FEI list will be at the discretion of the ETC. The process for updating the prospective FEI list is described in section 3.2.

Components of an FEI Description

- Title
- Description of the management issue (the problem; what changes have been observed)
- Fisheries involved
- Geographic area of focus including habitats
- Key environmental factors believed to be influencing the issue (both natural and anthropogenic)
- Key actors and institutions affected by the issue and their interests
- Relevant institutions that can affect the outcome or contribute to the solution (including state and federal agencies, NGOs, private businesses, and academics)
- Data or information gaps
- Vision of success

Figure 3.1.1 Recommended components of an FEI description.

3.2 Initiating, Updating, and Reassessing Fishery Ecosystem Issues

Once the final Fishery Ecosystem Plan is adopted by the Council, the main body of the document is expected to be reviewed every five years and undergo a revision process at that time if deemed necessary. As the functional unit for the Fishery Ecosystem Plan, FEIs will be evaluated on a more frequent basis to allow the Council the opportunity to consider to changes in ecosystem dynamics as they arise. Fishery Ecosystem Plan Appendix A, which contains a list of ongoing, prospective, and completed FEIs, will be reviewed by the Council annually. During this annual review, the Council will receive an overview of any new FEIs added to the prospective FEI list by the ETC and consider the status of each FEI. FEIs may be selected for initiation, which begins work on the FEI through the FEI Loop process (section 3.3), prioritized for future initiation upon availability of resources, or removed from the prospective FEI list. FEIs that are removed will be archived in a list of previously considered FEIs. While updates to the full FEI list in Appendix A will occur annually, the Council will receive updates on ongoing FEIs (initiated/in progress) on an ad hoc basis as work progresses.

3.3 Fishery Ecosystem Issue Loop

FEIs that are selected for work by the Council will proceed through the FEI Loop (Figure 3.3.1), which is modeled after the next-generation FEI Loop (Essington et al. 2016) but modified for operation on an issue-specific scale. The steps outlined in the FEI Loop are intended to provide structure to the process of investigating individual FEIs and identifying potential management pathways for the FEI, while leaving flexibility to recognize that each FEI is unique, and approaches will need to be tailored to the issue at hand. Each selected FEI, and its progress through the FEI Loop, will be managed by Council staff and/or an interdisciplinary working group consisting of subject-matter experts depending on the complexity of the FEI. The makeup of any team working on each FEI will be determined by Council leadership staff in consultation with the ETC and agency partners (e.g., Southeast Fisheries Science Center [SEFSC], Southeast Regional Office [SERO]) with knowledge of the data and expertise necessary to proceed. Approval from the Council chair will be sought if contracted external subject-matter expertise is required.

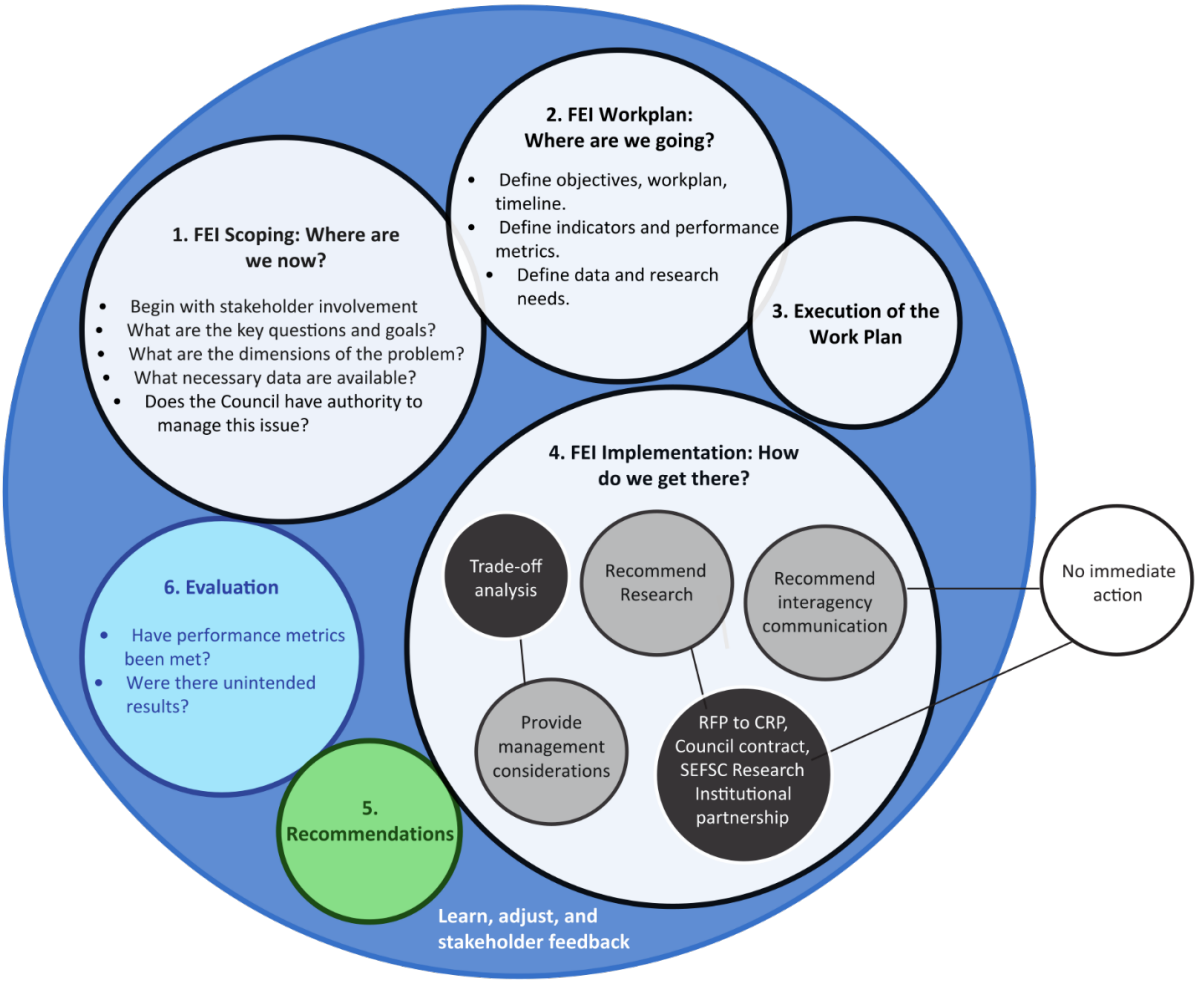

Figure 3.3.1 The FEI Loop – a structured, adaptive process for investigating individual FEIs (revised May 2025).

The FEI Loop is intended to be an iterative process where the scope of the problem can be evaluated, solutions can be explored, and steps can be repeated as more information becomes available or as adjustments are deemed necessary. The processes in the FEI Loop (Figure 3.3.1) are described as follows:

1. FEI Scoping: Where are we now?

The FEI scoping process aims to define the problem, the relevant questions that remain unresolved, and the data that are presently available to support the FEI. The information outlined in the scoping process will be used to begin charting courses toward potential solutions.

- *Begin with stakeholder involvement.* FEIs originate from stakeholder concerns, so it is essential to understand the impact of the FEI to stakeholders and their vision for management solutions that could help to alleviate those impacts. This information will help to focus the key questions surrounding the FEI and identify prospective FEI goals.

- *What are the key questions and goals?* Ecosystem issues are broad by nature and each FEI will have a host of potential unknowns to investigate, so it will be important to identify questions and goals that can both inform the Council decision-making process and address stakeholder concerns.
- *What are the dimensions of the problem?* The FEI scoping process will also define the dimensions of the problem, including its geographic scope, the species/resources/habitats affected, and the fisheries and stakeholders involved.
- *What necessary data are available?* Data availability will be assessed in this stage of the FEI Loop, which will help to define any data gaps that may need to be addressed in the next stage (FEI Workplan).
- *Does the Council have the authority to manage this issue?* Are there potential avenues to address this issue within the fisheries management process? This stage will identify whether external support and collaboration (section 2.4) will be necessary to develop meaningful recommendations.

2. FEI Workplan: Where are we going?

The FEI Workplan will use the preliminary information gathered during the FEI scoping process to guide the next steps toward exploring potential resolutions. This stage is intended to outline the tasks and information necessary to develop recommendations.

- *Define objectives, workplan, timeline.* This stage will identify the tasks needed to address the key questions and goals defined in the scoping process, determine the work products that are expected to be developed, and establish an expected timeframe for the tasks and products to be completed.
- *Define indicators and performance metrics.* FEI evaluation is necessary to both assess progress toward FEI goals and gauge the efficacy of any actions taken post-implementation. This stage defines the standards by which FEI progress will be measured.
- *Define data and research needs.* What data gaps exist that are critical to answering key questions? What further research is necessary to inform any potential recommendations for action?

3. Execution of the Workplan

The strategies devised in the FEI Workplan will be carried out during this stage.

4. FEI Implementation: How do we get there?

Once the workplan is complete or can no longer proceed without further information, the FEI will follow one or more of the following paths: provide management considerations, recommend research, or recommend interagency communication. The two latter paths result in no immediate action, but the FEI may re-enter the loop and proceed to management considerations after sufficient information is gathered through additional research or inter-agency cooperation.

- *Provide management considerations.* If sufficient data are available to answer the key questions directly, or if common sense dictates a clear path forward in addressing the problem, management considerations may be developed for Council consideration. Trade-off analyses, such as management strategy evaluation (MSE), may be necessary to illustrate the potential outcomes of prospective management considerations on the ecosystem, including biological and human components.
- *Recommend research.* If significant knowledge gaps prevent answering of key questions, further research on specific aspects of the FEI may be recommended. Some research recommendations may be addressed with analyses by Council staff and/or agency partners (e.g., SEFSC, SERO). Broader or more complex research recommendations may require external expertise. Potential pathways for accomplishing the recommended research will depend on resource availability. Occasionally there are specific research needs identified by the Council that could require development of a request for proposals if other state and federal partners are unable to conduct the work that is deemed essential to the Council's management decisions. Additionally, FEI research may be added to the list of Council Fishery Monitoring and Research Priorities (updated every four years) to provide partner agencies, funding agencies supporting fisheries research, and academic researchers with information on the current ecosystem research needs to support continued conservation and management of Gulf fishery resources.
- *Recommend interagency communication.* Communicating with external agencies may be necessary to achieve FEI goals if potential recommendations fall outside of the Council's jurisdiction. Interagency communication can range from articulating the impacts of extra jurisdictional actions on Gulf fisheries, requesting data from outside agencies that is necessary to complete FEI goals, or cooperation with outside agencies to develop collaborative management strategies.

5. Recommendations

The Council will review recommendations that are produced from the FEI Implementation stage, including the rationale for the recommendations and relevant findings from the FEI process to support the recommendations. Recommendations can range from improving Council communication on the issue (i.e., outreach and education to aid stakeholders in understanding the underlying causes of the FEI) to increasing Council awareness of the FEI in the decision-making process, to recommending management considerations that may require regulatory documents such as amendments to one or more FMPs. The Council may propose actions to implement the recommendations, request scientific review of recommendations by the SSC, or request that the FEI Loop continue and further investigation of the FEI be conducted to produce alternative recommendations.

6. Evaluation

The ETC will be responsible for monitoring the progress of each FEI and reporting to the Council. The evaluation stage will provide opportunities for learning and adjusting.

- *Have the performance metrics been met?* Indicators and performance metrics defined in the FEI Workplan will be evaluated in this stage. If the FEI recommendations

implemented have had their intended effect and FEI goals have been met, the ETC may recommend that the Council consider the FEI complete. If the FEI has not met its goals, the ETC can recommend steps in the FEI process that require reevaluation or adjustment.

- *Were there unintended results?* If the FEI has had unintended effects, such as underperformance of implemented strategies or has impacts to the ecosystem that were not anticipated, further evaluation and adjustment may be necessary.

CHAPTER 4. COMMUNICATIONS PLAN

4.1 Fishery Ecosystem Plan Communications

Most stakeholder engagement efforts will be centered around individual FEIs, which are the functional unit of the Fishery Ecosystem Plan and are tangible ecosystem concerns that many stakeholders will have a vested interest in. However, there is still a need to communicate the Fishery Ecosystem Plan process broadly, including high level objectives and expected outcomes. It is crucial to temper expectations of outcomes and clearly communicate timelines from the Fishery Ecosystem Plan process because it differs from the Council's typical regulatory process, which largely addresses issues on a single-species basis.

Because the Fishery Ecosystem Plan process is complex and nuanced, forward-facing communications should speak to a broad audience while providing opportunities for users to explore more in-depth resources. The main avenue for broader Fishery Ecosystem Plan communication will be through the Ecosystem Science webpage[3] on the Council's website. The Ecosystem Science webpage currently contains links to NMFS regional ecosystem guidance and Ecosystem Status Reports, but will be redesigned to focus on the Fishery Ecosystem Plan.

4.2 Fishery Ecosystem Issue Communications

Once an FEI is selected, stakeholders will play a pivotal role in scoping the impact that the issue has on fishermen and associated communities and identifying prospective management solutions. Because the FEI concept is centered around stakeholder input, it is important to effectively communicate FEI progress to interested parties. The Council's website will be the primary avenue for FEI communication, and each FEI will have a dedicated webpage that outlines relevant FEI background information and communicates the FEI process and potential outcomes. Progress on each FEI will be reported on the website by providing links to presentations, work products, and meeting summaries.

FEI communication should flow in both directions, and the Council should receive input on FEI impacts to stakeholders. Each FEI should develop a curated list of engaged and impacted stakeholders who can provide invaluable information during the FEI scoping phase and continue to provide feedback on the FEI as work progresses. Stakeholder sentiment on FEIs should be measured using an online tool similar to the Council's Fisherman Feedback Tool, which is typically deployed ahead of stock assessments to solicit input from stakeholders and can be adapted to request input about FEIs. Analysis of stakeholder sentiment responses by sector and location can help to inform FEI prioritization. Additionally, the Council will engage a social science consultant to formally measure social and economic impacts of priority FEIs upon initiation of the Fishery Ecosystem Plan.

[3] https://gulfcouncil.org/fishery-management/fisheries-science/ecosystem-science/

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APPENDIX A. FISHERY ECOSYSTEM ISSUES