THE WATER INSTITUTE

Technical Memorandum

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LOUISIANA MARINE MAMMAL RESTORATION STRATEGY

Task 1.1 Literature Review

INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center has partnered with The Water Institute (the Institute) to support the development of a Marine Mammal (MM) Restoration Portfolio and Strategy document for Louisiana as part of NOAA's Damage, Assessment, Remediation and Restoration Program (DARRP). The purpose of the strategy document is to ensure that Deepwater Horizon (DWH) Natural Resource Damage Assessment (NRDA) funds are dedicated to compensating for MM injuries in Louisiana, and that the funds are directed to the most beneficial and logistical actions for restoration of MM populations occupying Louisiana coastal and offshore waters. To be fully implementable, the restoration plan (referred to herein as the Strategy), recommended actions, and resulting strategy document must consider multiple challenges specific to Louisiana including remote locations, logistical constraints, limited capacity and experience, competing interests, restrictive funds, limited local support, uncertainty in MM threats and stressors, and changing environmental conditions.

Development of the Strategy is divided into two working tasks which will lead to the development of a final MM Restoration Strategy Document and a technical appendix. The project is currently progressing on Task One which involves the elicitation of MM restoration goals, objectives, approaches, and project concepts applicable to Louisiana (Figure 1). This will be accomplished through four subtasks including: Task 1.1: Literature Review, Task 1.2: Subject Matter Expert (SME) Workshop(s), Task 1.3: Targeted Public Workshop, and Task 1.4: Summary Table. Tasks 1.1, 1.2, and 1.3 will provide foundational input for consideration in the Strategy, and Task 1.4 will provide formal summarization of the elicited information.

To accomplish Task 1.1, NOAA and the Institute worked collaboratively to develop a framework to guide a future targeted workshop discussion with MM SMEs to gain input on MM goals, objectives, approaches, and project concepts best suited for Louisiana. The framework also served as the initiation of a structured decision-making (SDM) process that will guide the selection of the most beneficial and logistical projects and actions to be considered for inclusion in the Strategy and final MM restoration strategy document and technical appendix. The SDM process provides a standardized method for defining

a management problem, selecting objectives, alternatives, and performance measures, and conducting consequence and trade-off analyses (Gregory & Long, 2009). The Strategy will identify key partnerships, engagement needs and opportunities, short- and long-term priorities and their connection to other marine mammal restoration and Monitoring and Adaptive Management (MAM) activities with Trustee Implementation Groups (TIGs) that have a geographic interest in LA.

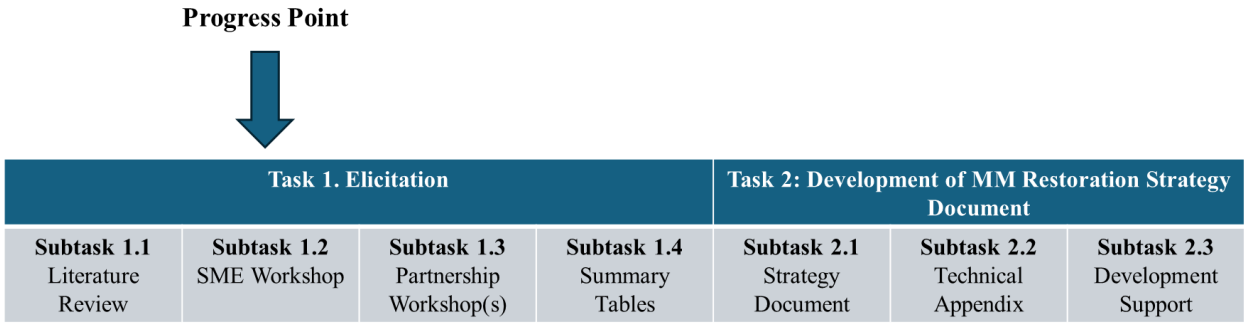


Figure 1. Current project status for tasks related to completion of the Louisiana Marine Mammal Restoration Strategy. Subtask 1.1: Literature Review has been completed.

ACTIVITIES

During January to March 2025, NOAA and the Institute worked together to complete Task 1.1: Literature Review. In coordination, NOAA and the Institute compiled, assessed, and synthesized data necessary for developing the initial decision framework model. Supporting information was obtained from:

- The Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/ PEIS), (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016)
- The Marine Mammal Strategic Framework document (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2017)
- The MM section of the Louisiana Monitoring and Adaptive Management (LA MAM) Strategy Appendix E (LA TIG, 2021)
- The Monitoring and Adaptive Management Activity Implementation Plan: Monitoring Approaches for Bottlenose Dolphin Restoration in Louisiana (Deepwater Horizon Louisiana Trustee Implementation Group, 2022)

A significant body of work detailing human impacts on MMs, MM health, and MM monitoring and data gaps was detailed in the PDARP/PEIS (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016) and the LA MAM Strategy (Deepwater Horizon Louisiana Trustee Implementation Group, 2021), and MM Strategic framework (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2017). That information is incorporated by reference into the Strategy framework. Additionally, substantial input was obtained from communications between MM Subject Matter Experts at the

Louisiana Marine Mammal Planning Meeting in January 2024 (NOAA Southeast Regional Office (SERO) Marine Mammal Branch (MMB), 2024), and other formal and informal communication during January 2023 to January 2025. Together, NOAA and the Institute organized the information gained through the literature review process into a visual framework to serve as the foundation for discussion in future SME workshop, development of potential strategic partnerships, and ultimately the development of the final Strategy.

OUTCOME

NOAA and the Institute identified an initial set of objectives. First, a single high-level strategic objective for achieving long-term MM restoration in Louisiana coastal and offshore waters, five fundamental objectives that are specific to this effort and articulate desired end state being pursued, and five means objectives (i.e. alternatives or actions) for achieving the fundamental objectives. The high-level strategic objective represents the visionary and overarching goal of the Strategy, which is to develop and implement a strategic plan that restores MM populations that occupy Louisiana coastal and offshore waters. The fundamental objectives are quantifiable and are the objectives that the means objectives (i.e., alternatives) are weighed against. The means objectives represent potential actions, or sets of actions, that can be implemented to meet the fundamental objectives. NOAA and the Institute organized all objectives into an initial visual framework, which serves as the primary deliverable for Task 1.1 (Figure 2), and further refined the framework to include project components and types for consideration in accomplishing means objectives (Table 1).

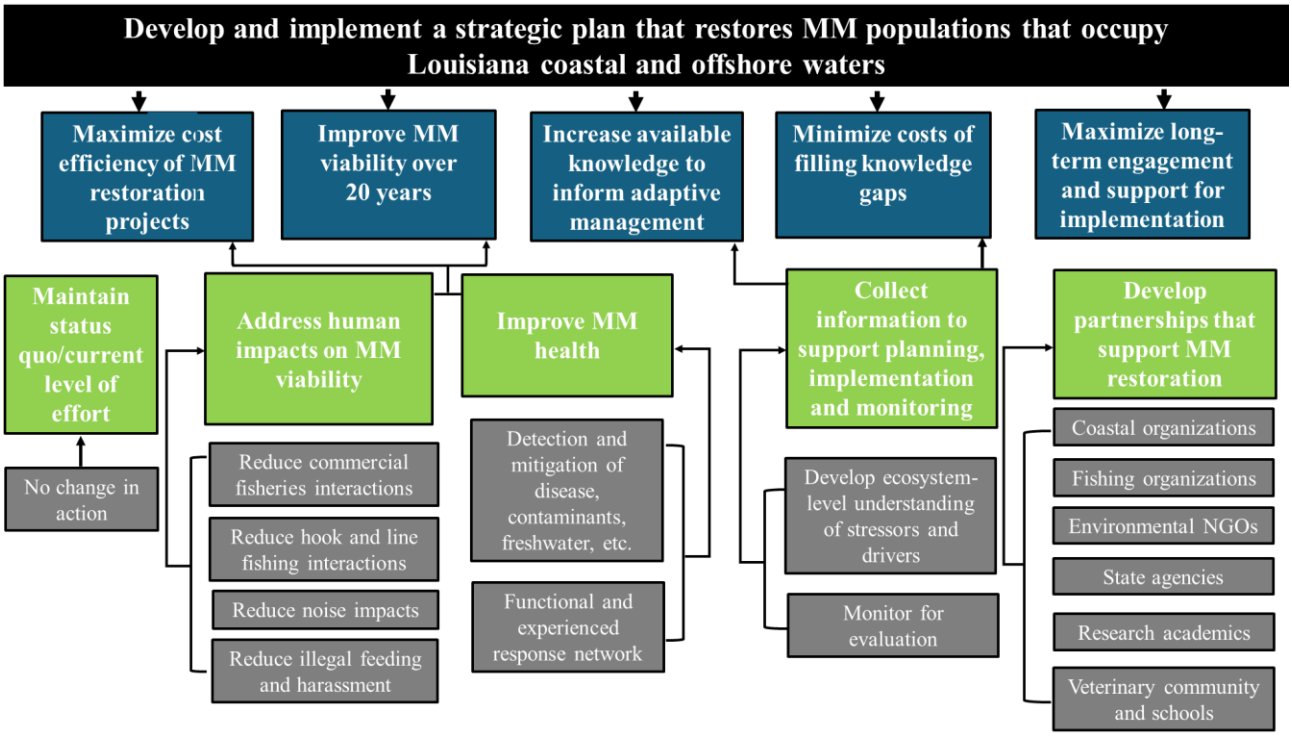


Figure 2. Framework document produced from Task 1.1 – Literature Review, formatted according to NOAA's direction, of goals, objectives, approaches, and project concepts for consideration. Framework presents the initiation of the structured decision process (SDM) and presents the high-level strategic objective (black box) of the Marine Mammal (MM) Strategy, the fundamental objectives (teal boxes) that the means objectives (i.e.; alternatives) are

weighed against, means objectives (green boxes) (i.e.; potential actions or alternatives) that could be implemented to meet the fundamental objectives, and potential components (i.e.; types of actions) for achieving the means objectives (gray boxes).

Table 1. Means objectives (i.e., potential actions or alternatives), components (i.e., types of actions), and potential project or action types that could be implemented to meet Louisiana MM restoration strategy fundamental goals.

Means Objectives	Components	Potential Projects/Action Types
Maintain status quo/ current level of effort	No change in actions	None
Address human impacts on MM viability	Reduce commercial fisheries interactions	Otter trawl
		Skimmer trawl
		Menhaden purse seine
		Crab pot
	Reduce hook and line fishing interactions	Entanglement
		Depredation
	Reduce noise impacts	Impacts of finite duration (e.g., coastal construction)
		Ubiquitous impacts (e.g., vessel traffic, underwater cables, etc.)
	Reduce illegal feeding and harassment	Associated with fishing
		Associated with tourism/boating
		Intentional harm
	Reduce mortality from vessel collisions	Inshore vessels
		Offshore vessels
Improve MM health	Detection, mitigation of disease/contaminants/freshwater etc.	Early warning
		Response plan
		Surge capacity
	Functional and experience response network	Fully equipped primary partner as lead organization for LA
		Network of organizations in and adjacent to LA
Collect Information to support planning, implementation and monitoring	Monitor for evaluation	Understand population trends – before/after
		Understand health – before and after
		Understand human impacts/interactions – before and after
	Develop ecosystem level understanding of stressors and drivers	Prey
		Habitat use
		Environmental variability
Develop partnerships that support MM restoration	Coastal organizations	Marine businesses, police/fire departments, service organizations
	Fishing organizations	Shrimp, menhaden, recreational hook and line
	Environmental NGOs	Healthy Gulf, Audubon Nature, National Wildlife Federation (NWF), smaller local organizations

Means Objectives	Components	Potential Projects/Action Types
	State agencies	Louisiana Coastal Protection and Restoration Authority (CPRA), Louisiana Department of Wildlife and Fisheries (LDWF)
	Research academics	Louisiana State University (LSU), Nicholls State University, Louisiana Tech University, Tulane University
	Veterinary community and schools	LSU, others

SUMMARY

In Task 1.1 – Literature Review, NOAA and the Institute developed a framework to guide discussion and elicit input from MM SMEs regarding the stressors, threats, and priorities for MM in Louisiana. Development of this framework also served as the initiation of an SDM process that NOAA and the Institute will use to identify potential partnerships and projects for MM restoration in Louisiana. As the Institute and NOAA work towards development of the MM Restoration Strategy document and technical appendix, there will be additional engagement workshops. Through the workshops, this initial set of objectives may be revisited, revised, and updated if gaps are identified. This engagement and potential revisions will result in guiding the development of a Strategy, that if implemented, has the highest likelihood of success.

REFERENCES

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