



LOUISIANA MARINE MAMMAL RESTORATION STRATEGY

Task 1.3 Methods and Outcomes of Partnership Engagement

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PREFACE

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center contracted the Water Institute (the Institute) to support the development of a Louisiana Marine Mammal (MM) Strategy (herein referred to as the Strategy) as part of NOAA's Damage, Assessment, Remediation and Restoration Program (DARRP). This activity was funded by the *Deepwater Horizon* (DWH) oil spill Louisiana Trustee Implementation Group (LA TIG) with the intent that the Strategy could support development of a MM Restoration Plan for the Louisiana Restoration Area, including coastal and offshore waters, to address MM injuries caused by the oil spill. Marine mammals were one of many restoration types identified in the DWH oil spill Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS) (DWH NRDA Trustees, 2016), and within that plan, approximately \$50 million was allocated for MM restoration in the Louisiana Restoration Area to compensate for MM injuries caused by the oil spill.

Several challenges—and opportunities—exist related to the development and successful implementation of the MM Restoration Plan, intended to be informed by the Strategy, for the Louisiana Restoration Area. Project selection, sequencing, timing, funding levels, and evaluation all need careful consideration. Further, successful implementation of the Restoration Plan will require cooperation, collaboration, and partnership with entities including academic institutions, non-government experts, local fishing communities, state agencies and government, and local government and community leadership, and so must also reflect their interests. As such, a successful Louisiana MM restoration effort will benefit from a robust Strategy tailored to the state's unique challenges and opportunities. The Strategy (the primary deliverable of this project) will identify critical partnerships, potential restoration actions, engagement needs and opportunities, and key themes and priorities, as well as their connection to other relevant MM restoration and Monitoring and Adaptive Management (MAM) activities by groups with a geographic interest in Louisiana.

This report summarizes the use of a rapid-prototyping application of Structured Decision-Making to identify potential restoration actions and key themes for the Strategy; develop a common framework for restoration action development, evaluation, and adaptive management; determine the types of partner groups necessary to engage for successful Strategy implementation; and elicit input from representatives from those partner groups.



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Term
AAR	Audubon Aquarium Rescue
ANI	Audubon Nature Institute
BSE	Bay, Sound, and Estuary
BTNEP	Barataria-Terrebonne National Estuary Program
DARRP	Damage, Assessment, Remediation, and Restoration Program
DIDSON	Dual-frequency IDentification SONar
DWH	Deepwater Horizon
LASG	Louisiana Sea Grant
LA TIG	Louisiana Trustee Implementation Group
LDWF	Louisiana Department of Wildlife and Fisheries
LSU	Louisiana State University
MM	Marine Mammal
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NMMF	National Marine Mammal Foundation
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
PDARP	Programmatic Damage Assessment and Restoration Plan
PEIS	Programmatic Environmental Impact Statement
SDM	Structured Decision-Making
SME	Subject Matter Expert(ise)
TIG	Trustee Implementation Group
TWI	The Water Institute
UHMWPE	Ultra-High-Molecular-Weight-PolyEthylene



1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center contracted the Water Institute (the Institute) to support the development of a Louisiana Marine Mammal (MM) Restoration Strategy (hereafter, “the Strategy”) as part of NOAA’s Damage, Assessment, Remediation and Restoration Program (DARRP). This activity was funded by the Deepwater Horizon (DWH) oil spill Louisiana Trustee Implementation Group (LA TIG) with the goal of the Strategy supporting development of a MM Restoration Plan for the Louisiana Restoration Area, including coastal Louisiana and offshore waters, to address MM injuries caused by the oil spill. Marine mammals were one of many restoration types identified in the DWH Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016), and within that plan, approximately \$50 million was allocated for MM restoration in the Louisiana Restoration Area.

Development of the Strategy was divided into two working tasks to lead to the production of the Strategy document and a technical appendix. Activities under Task 1 included the elicitation of MM restoration goals, objectives, approaches, and project concepts applicable to Louisiana. Task 1 had four subtasks including Task 1.1: Literature Review (Minor, Cowan, Carruthers, & Mallindine, 2025), Task 1.2: Subject Matter Expert (SME) Workshop(s) (Minor, Cowan, Carruthers, Mallindine, et al., 2025), Task 1.3: Targeted Partnership Workshop(s), and Task 1.4: Summary Table. Tasks 1.1, 1.2, and 1.3 provide foundational input for consideration in the Strategy, and Task 1.4 provide formal summarization of the elicited information. This report details the work done to complete Task 1.3 and the resulting outputs and outcomes, and includes a summary of outcomes from Task 1.4 as an appendix.

The Institute and NOAA used a rapid prototyping application of Structured Decision-Making (SDM) to identify potential MM restoration actions with a high likelihood of successful implementation and restoration outcomes for dolphins in Louisiana, building from the outputs of Tasks 1.1 and 1.2 (Minor, Cowan, Carruthers, Mallindine, et al., 2025; Minor, Cowan, Dausman, Carruthers, et al., 2025). For each of these potential actions, a conceptual model was created to outline implementation components, as well as the types of partners that would enable success. From the conceptual models, the Institute and NOAA identified a common framework to include in the Strategy that could be used for any potential restoration action, including those not conceptual modeled or identified during this project. In addition, the team used the models to identify recurrent themes for the Strategy.

In addition, NOAA and the Institute used the conceptual models to identify types of partner groups that occurred with high frequency across potential actions. Task 1.3: Targeted Partnership Workshop(s) was originally envisioned to include one or more large group working sessions with these partners groups. However, the Institute team – in coordination with NOAA – determined that more targeted engagement of potential partners through a series of small team meetings would be a more effective way to advance work on the Strategy. That format allowed for more partner-specific engagement on potential roles, synergistic activities, and future opportunities. Therefore, Task 1.3 was executed through a series of targeted meetings with potential partners rather than larger workshops. The Institute team used these meetings to gain an understanding of how partners may be able to support the coproduction of MM



restoration actions and their implementation. The information elicited in Task 1.3 is being used to develop a framework for the Strategy and inform its content (Figure 1).

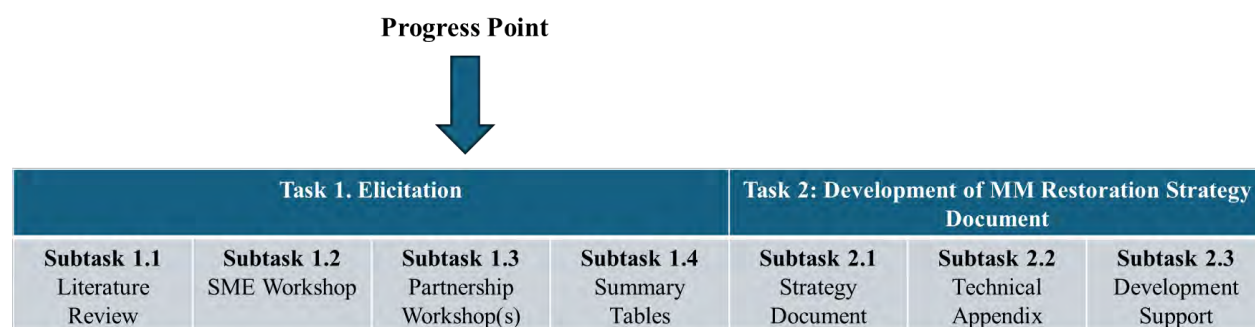


Figure 1. Current project status for tasks related to completion of the Louisiana Marine Mammal Restoration Strategy. Subtask 1.3 was executed through a series of targeted partnership meetings rather than workshops.

2.0 METHODS

MM conservation in Louisiana waters is advanced through the collective action of multiple entities, therefore a key element of the Strategy is identifying decision-makers and partners needed for its successful implementation. These entities will be engaged to coproduce and refine the Strategy and its implementation to maximize effectiveness and likelihood of success. As a first step, potential MM restoration actions needed to be identified to then support determining potential partner groups for MM restoration implementation, as well as to inform themes and the overall Strategy. In this section, we describe the process used to identify and refine potential restoration actions.

2.1. STRUCTURED DECISION-MAKING: BACKGROUND

The Institute facilitated development of the Strategy using principles of SDM, a transparent and objectives-orientated approach to identifying and evaluating alternatives for complex problems where there are multiple objectives and concerns (Dalyander et al., 2016; Hammond et al., 1999; Keeney, 2004). SDM consists of breaking down a decision-making process into a set of steps designed to systematically identify and weigh alternatives while minimizing the potential for biases to influence the decision (Figure 2). In this case, the decision is what themes and steps to a common action framework to include in the Strategy, with a related decision of what types of partners to engage in formulating and implementing restoration actions. The SDM steps are collectively referred to as the ProACT cycle and include: (1) clarification of the **P**roblem or decision-context; (2) articulating the **O**bjectives of the decision makers and partners; (3) identifying **A**lternatives that can advance those objectives; (4) evaluating the **C**onsequences of potential alternatives on the desired objectives; and (5) considering **T**radeoffs as part of optimizing selection of an alternative to ultimately support deciding and acting. SDM is particularly well-suited to develop the Strategy because it is transparent and objective-orientated, can facilitate engagement with potential partner groups, and could form the basis of adaptively managing the implementation of the Strategy and the Restoration Plan it informs.

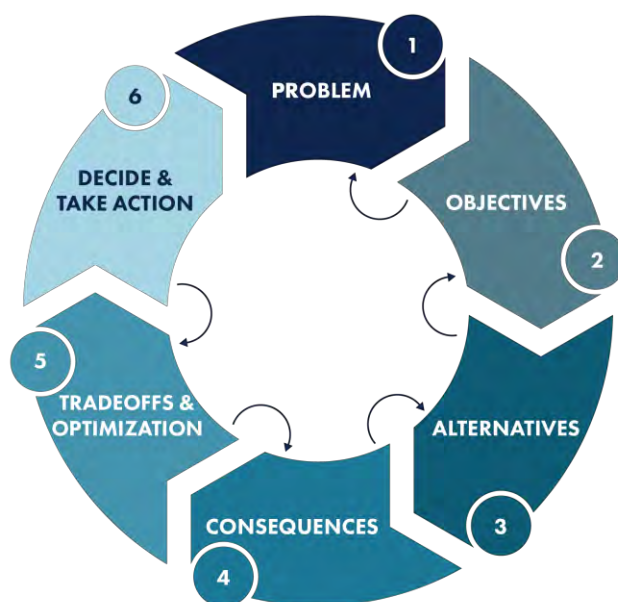


Figure 2. Structured Decision-Making (SDM) ProACT cycle, which consists of identifying the Problem or decision context; articulating Objectives; specifying Alternative courses of action; evaluating Consequences; considering Tradeoffs and optimizing; and taking action.

The Institute implemented SDM through rapid prototyping, where a cycle of ProACT is conducted with a small group of decision-makers. Often the outcomes of rapid prototyping are used to frame the decision context and identify key partners, data, types of analysis, or other factors for a second, more in-depth iteration through the ProACT cycle. For example, the Institute used rapid prototyping SDM to identify critical uncertainties limiting a Nature-Based Solution decision, which then focused in-depth modeling and data analysis during a second round of SDM (Dalyander et al., 2024). Here, rapid prototyping was used to identify the problem context, objectives, and potential, representative restoration actions, as well as to preliminarily evaluate the potential outcomes or tradeoffs of those actions. These results were then used to identify common themes and a framework for restoration actions, as well as to determine the types of partners needed to implement the Strategy. The SDM framework could be used in the future to refine the Strategy or the Restoration Plan it informs, including through adaptive management, by cycling through ProACT to evaluate actions and their implementation approaches against the identified objectives. A team of Institute and NOAA personnel with expertise in MMs and Louisiana implemented rapid prototyping through working sessions that built upon an initial set of meetings conducted with subject matter experts (SMEs), where the problem context and objectives of the Strategy were initially identified (Minor, Cowan, Carruthers, Mallindine, et al., 2025).

2.2. RAPID PROTOTYPING FOR MARINE MAMMALS

2.2.1 Decision Context and Objectives

The Institute team worked with NOAA representatives to refine the decision context for the Strategy, which was initially developed as part of working with SMEs (Minor, Cowan, Carruthers, Mallindine, et al., 2025):



To develop a community of care for MMs in inshore, coastal, and offshore waters of Louisiana that supports thriving populations, NOAA needs to develop a Strategy that articulates the strategic partnerships and restoration investments over 15+ years that achieve both thriving MM populations and a long-term collaborative partner network. To be fully implementable, the Strategy needs to consider remote locations, logistical constraints, limited capacity and experience, competing interests, restrictive funds, limited local support, uncertainty in MM threats, and changing environmental conditions.

This decision context articulates the long-term goal of the Strategy, namely to support thriving MM populations through strategic partnering and investments. In addition, the decision context identifies considerations relevant to Strategy development, including practical and logistical constraints such as avoiding actions with no pathway to success. The decision context also identifies the need to consider tradeoffs between actions and the importance of considering uncertainties associated with MM sustainability. For example, actions would ideally mitigate drivers causing the greatest harm to MM populations, but the relative magnitude of harm from different drivers now and in an evolving marine environment is not fully certain.

Another key component to SDM is identifying fundamental objectives, which are goals that are foundationally important and that provide benchmarks for evaluating potential alternatives. In contrast, SDM means objectives provide value because they advance a fundamental objective. For example, a car buyer interested in low year-over-year costs might identify an objective of “high fuel efficiency”. If the buyer’s primary concern is future expenses, fuel efficiency is better framed as a means objective with an underlying fundamental objective of “minimize annual operational costs” that captures costs such as insurance. Articulating fundamental objectives is important because it allows for a more accurate evaluation of alternatives and tradeoffs. Fundamental objectives are often refined throughout the SDM cycle, including as measurable metrics and outcomes for use in evaluating alternatives are defined. Means objectives can similarly be refined and often form the basis of potential alternatives within SDM.

An initial set of fundamental objectives was identified early in the project (Minor, Cowan, Dausman, Carruthers, et al., 2025) and included:

- Maximize cost efficiency of MM restoration projects;
- Improve MM viability over 20 years;
- Increase available knowledge to inform adaptive management;
- Minimize costs of filling knowledge gaps; and
- Maximize long-term engagement and support for implementation.

Means objectives and alternatives were also identified, including addressing human impacts on MM viability; improving MM health; collecting information to support planning, implementation, and monitoring; and developing partnerships that support MM restoration. Engagement of SMEs during workshops held in Task 1.2 further expanded the list of means objectives, including adding “reduce hook and line fishing interactions” and “preserve and/or restore habitat” (Minor, Cowan, Carruthers, Mallindine, et al., 2025). During the effort described here, the Institute and NOAA used these means



objectives to identify alternative potential restoration actions to inform Strategy development (refer to Section 2.2.2 Alternatives and Preliminary Refinement)

The Institute and NOAA refined the list of fundamental objectives during Task 1.3 to be more effective in clearly capturing tradeoffs across alternatives, in this case, the potential actions used as representative activities to identify key partners, themes, and a common restoration framework for the Strategy. Two of the initial objectives—maximize cost efficiency of MM restoration projects and minimize costs of filling knowledge gaps—included expense considerations, which were combined to a single fundamental objective of minimizing overall implementation costs. The objective to increase available knowledge to inform adaptive management was refocused on the effectiveness of adaptive management, which could result from increased knowledge or from better pathways for incorporating that knowledge into practice. Knowledge gathering was recharacterized as a key component that would be pervasive throughout virtually all potential actions as a core means for addressing critical uncertainties. Lastly, a fundamental objective was added to minimize staff time spent implementing projects, in recognition that actions requiring less time allow more actions to be advanced, assuming other objectives are met. The updated list of fundamental objectives included:

1. Improve MM viability over 20 years

A core component of the Strategy is ensuring the viability of MM populations, in other words, that they remain self-sustaining. Although the goal is for MMs to be viable into perpetuity, the Institute and NOAA set a time frame of 20 years for this objective to correspond with a planning period over which actions taken now would most likely impact population viability.

2. Minimize implementation costs as part of maximizing the cost efficiency of MM restoration projects

NOAA has a finite amount of financial resources to invest in Strategy implementation and would therefore prioritize actions that cost less, assuming they have the same or greater positive impact on MMs as those that cost more. By minimizing the implementation costs associated with specific actions in this way, more funds are available to devote to the overall portfolio of Strategy actions.

3. Increase the effectiveness of adaptive management

There are numerous uncertainties associated with the current and future response of MM populations to drivers, in addition to how environmental conditions will evolve in the future. For example, it is impossible to know how many MMs are inadvertently harmed by fishing gear each year, since not all impacted individuals are found, nor is it possible to know exactly how fisheries and fishing patterns will evolve in the future and what the potential impacts will be on MMs. One objective is therefore to increase the effectiveness of adaptive management other activities deliberately planned for and taken in response to changing conditions. For example, the effectiveness of individual actions could be monitored and that analysis used to periodically reevaluate Strategy actions or their implementation.

4. Maximize long-term engagement and support for implementation of MM management



Partnerships are critical for the effective implementation of the Strategy; without committed and effective partnerships, MM restoration is likely to fail. For this reason, a key objective of the Strategy is to maximize engagement and support from local partners.

5. Limit the staff implementation time needed as part of maximizing the efficiency of MM restoration projects

Like financial resources, there are a finite number of staff and amount of staff time that NOAA can commit to implementation of the Strategy now and in the future. For this reason, actions that minimize the amount of time commitment – if they are just as effective as those that are more time-consuming – are preferred, since that potentially increases the number of actions that can be undertaken.

These objectives form the basis of preliminary identification, refinement, and evaluation of potential actions, and were used to identify key partners and a common framework and themes for the Strategy.

2.2.2 Alternatives and Preliminary Refinement

The project team – comprised of Institute members and representatives from NOAA (hereafter *the team*) – started the process of identifying potential alternative actions by reviewing the list of objectives, needs, and actions identified by the SME working group (Minor, Cowan, Carruthers, Mallindine, et al., 2025). Note, *alternatives* here refers to MM restoration activities evaluated in SDM rapid prototyping for the purposes of developing a framework for the Strategy and does not refer to or connote alternatives for the National Environmental Policy Act (NEPA) or other regulatory contexts. That exercise generated an extensive list of potential actions, which were first cross-referenced with PDARP/PEIS approaches to compile a list of potential actions consistent with that document. Then, the list was further refined to ensure each potential action is a complete activity with all steps necessary to lead to the restoration of MMs. In addition, the team refined the list to ensure potential activities were distinct, in other words, that no alternative was a minor variation of another. The resulting consolidated list of alternatives to advance through the SDM process consisted of:

- Decrease incidences of intentional harm to dolphins associated with commercial fishing
- Decrease dolphin mortality associated with menhaden purse seine fisheries
- Decrease dolphin entanglements in crab pot gear
- Decrease dolphin entanglement in otter trawl gear
- Decrease dolphin entanglement in skimmer trawl gear and decrease dolphin damage to skimmer trawl nets
- Reduce entrapment risk to dolphins during construction
- Enhance MM stranding network in Louisiana
- Increase/protect prey availability for MMs in Louisiana
- Decrease interactions associated with hook and line fisheries
- Decrease interactions associated with tourism and boating



- Decrease intentional harm associated with recreational fisheries interactions
- Decrease illegal feeding of MM associated with recreational fishing
- Develop strategies that mitigate environment-related disease
- Develop research to improve ecosystem and population-level understanding of MM in LA
- Decrease feeding associated with recreational fish cleaning stations

The team then conducted a preliminary consequence analysis of these alternatives to identify which potential actions to use in building a common restoration action framework, identifying Strategy themes, and determining the types of potential partners core to successful MM restoration in Louisiana. The assessment consisted of a small group of NOAA representatives individually evaluating each alternative against each of the five fundamental objectives identified in Section 2.2.1 Decision Context and Objectives (Table 1). Evaluators were asked to rank each alternative against each objective on a scale of 1 to 3, where 1 corresponded to a negative impact of the activity on the objective; 2 corresponded to a neutral (or no) impact on the objectives; and 3 corresponded to a positive impact on the objective. Evaluators could also rank with a '0', indicating no knowledge of what the impact might be. Evaluators were similarly asked to provide a ranking evaluating different types of uncertainty associated with each alternative. These included:

- Scientific uncertainty, the uncertainty associated with whether the type or level of impact the alternative would have on MMs;
- Logistical uncertainty, the uncertainty associated with whether the alternative was practically feasible;
- Partnership uncertainty, the uncertainty associated with whether critical partners would be interested in engaging to support the alternative; and
- Uncertainty in the level of NOAA's time and investment.

Uncertainty was also ranked on a scale of 1–3, with 1 indicating that there was virtually no uncertainty and 3 indicating there was very high uncertainty; evaluators could also respond with 0, indicating they had no basis for evaluating the level of uncertainty. The individual ranking sheets included additional information to support evaluation, including the category of the alternative and examples of component actions that might be associated with it. Participants were also given space to note any concerns relevant to specific geographic stocks (i.e., concerns that varied spatially), as well as other notes on their rationale for ranking.



Table 1. Example of a spreadsheet filled out by individual team members for a preliminary evaluation of potential MM restoration alternatives in Louisiana. Note, the first alternative row, captive breeding dolphins, was provided for example purposes only. It was not under consideration as a potential action.

Original Categorization	Components	Complete Alternative	Potential for meeting fundamental objective (0 = No clue, bad=1, good =3)					Level of Uncertainty (0= No clue, 1= low, 3 = high)				Geographic, Stock Concerns (if any)	Notes
			Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Scientific Uncertainty	Logistical Uncertainty	Partnership Uncertainty	NOAA's Time/Investment		
EXAMPLE	EXAMPLE	Captive breed dolphins for release to increase population size											
Commercial Fishing	Intentional harm	Decrease incidences of intentional harm to dolphins associated with commercial fishing											
Commercial Fishing	Menhaden purse seine	Decrease dolphin mortality associated with menhaden purse seine fisheries											



After team members determined their individual rankings across all objectives and uncertainties, the team then shared their scores and discussed them to assign a single, consensus-based rank to each alternative. When there was no immediate consensus, team members discussed the rationale for their rankings and their associated questions or concerns. The team was ultimately able to reach consensus scores for every alternative, with recognition that these scores were only being used as a preliminary assessment for rapid prototyping purposes and the identification of a common restoration action framework, themes, and potential implementation partner groups (Table 2). Based on the discussion, the team added an alternative and ranked it, “Decrease feeding associated with recreational fish cleaning stations”. This alternative was split out from another alternative on recreational fishing because the pathways for implementation are not the same as those that would be needed for mitigating harm associated with other aspects of recreational fishing. In addition, the team identified two additional alternatives for consideration: (1) Build engagement/partnerships network to raise visibility and awareness; and (2) Build and support network for MM science and research in Louisiana. These alternatives were retained for further consideration, while also noting that they are likely overarching pathways to success—referred to as strategic objectives in SDM—rather than specific alternatives. In other words, those two actions are likely to permeate through all other actions, rather than being standalone alternatives.



Table 2. Consensus scores with ranks for each objective and uncertainty for the alternatives identified as potential restoration actions during the SDM process.

Complete Alternative	Potential for meeting fundamental objective (0 = No clue, bad=1, good =3)					Level of Uncertainty (0= No clue/no partner, 1=Certain , 3 =Uncertain)			
	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Scientific	Logistical	Partner-ship	NOAA's Time
Decrease incidences of intentional harm to dolphins associated with commercial fishing	3	2	2	1	2	2	2	2	2
Decrease dolphin mortality associated with menhaden purse seine fisheries	3	2	3	2	2	1	1	1	2
Decrease dolphin entanglements in crab pot gear	1	3	3	2	2	3	3	3	3
Decrease dolphin entanglement in otter trawl gear	3	1	2	2	1	1	1	2	1
· Decrease dolphin entanglement in skimmer trawl gear · Decrease dolphin damage to skimmer trawl nets	3	2	2	1	2	2	2	2	2
Reduce entrapment risk to dolphins during construction	1	2	0	1	1	3	1	3	2
Enhance MM stranding network in Louisiana	2	2	3	3	2	1	1	2	1
Increase/Protect prey availability for MM in Louisiana	2	1	1	1	1	3	3	3	1
Decrease interactions associated with hook and line fisheries	2	1	2	3	2	2	2	2	2
Decrease interactions associated with tourism and boating	1	1	1	1	2	3	3	3	3
Decrease intentional harm associated with recreational fisheries interactions	1	1	2	2	1	3	3	2	2
Decrease illegal feeding of MM associated with recreational fishing	1	2	1	2	2	3	2	2	2
Develop strategies that mitigate environment-related disease	1	1	3	3	1	3	3	3	2
Develop research to improve ecosystem and population-level understanding of MM in LA	2	1	3	3	2	1	2	2	1
Decrease feeding associated with recreational fish cleaning stations	2	2	1	2	3	3	2	2	1



The team synthesized these results by summing the total score for each alternative across all the objectives and uncertainties for the consensus scores. This synthesis was conducted first with no weighting, with all objectives considered to have equal importance (Table 3).

Table 3. Unweighted for each alternative based on consensus-based scoring (Table 2). The objectives were not weighted in this case.

Unweighted Scoring		
Complete Alternative	Objective Scores	Uncertainty Scores
Decrease dolphin mortality associated with menhaden purse seine fisheries	12	5
Enhance MM stranding network in Louisiana	12	5
Develop research to improve ecosystem and population-level understanding of MM in LA	11	6
Decrease dolphin entanglements in crab pot gear	11	12
Decrease incidences of intentional harm to dolphins associated with commercial fishing	10	8
Decrease dolphin entanglement in skimmer trawl gear and decrease dolphin damage to skimmer trawl nets	10	8
Decrease interactions associated with hook and line fisheries	10	8
Decrease feeding associated with recreational fish cleaning stations	10	8
Decrease dolphin entanglement in otter trawl gear	9	5
Develop strategies that mitigate environment-related disease	9	11
Decrease illegal feeding of MM associated with recreational fishing	8	9
Decrease intentional harm associated with recreational fisheries interactions	7	10
Increase/Protect prey availability for MM in Louisiana	6	10
Decrease interactions associated with tourism and boating	6	12
Reduce entrapment risk to dolphins during construction	5	9

Next, the scores were recomputed, weighting Objectives 1 and 4 twice as heavily as the other objectives (Table 4). This weighting was based on input from the team, who determined that improving the viability of MM populations and engaging partners were relatively more important than the other objectives. The goal of the weighted scoring assessment was to determine if there were significant changes in which alternatives performed well if the primary objectives of the Strategy were given more weight. As before, the goal was not to identify actions for inclusion in the Strategy, but rather to prioritize which alternatives to focus on as representative potential actions for identifying a common restoration action framework, themes, and types of partners groups to engage in Strategy advancement. In addition, inclusion of the uncertainty scores allowed the team to determine if there were alternatives for which additional information such as background literature or input from SMEs might be beneficial as part of Strategy development, and/or where there were areas of research focus that should be considered to strengthen the



potential for continued refinement and improvement of the Strategy's implementation through adaptive management.

Table 4. Weighted score for each alternative based on consensus-based scoring (Table 2). The objectives in this case were weighted, with Objectives 1 and 4 weighted twice as highly as the other objectives.

Weighted Scoring		
Complete Alternative	Objective Scores	Uncertainty Scores
Decrease dolphin mortality associated with menhaden purse seine fisheries	17	5
Enhance MM stranding network in Louisiana	17	5
Develop research to improve ecosystem and population-level understanding of MM in LA	16	6
Decrease interactions associated with hook and line fisheries	15	8
Decrease dolphin entanglement in otter trawl gear	14	5
Decrease incidences of intentional harm to dolphins associated with commercial fishing	14	8
Decrease dolphin entanglement in skimmer trawl gear and decrease dolphin damage to skimmer trawl nets	14	8
Decrease feeding associated with recreational fish cleaning stations	14	8
Decrease dolphin entanglements in crab pot gear	14	12
Develop strategies that mitigate environment-related disease	13	11
Decrease illegal feeding of MM associated with recreational fishing	11	9
Decrease intentional harm associated with recreational fisheries interactions	10	10
Increase/Protect prey availability for MM in Louisiana	9	10
Decrease interactions associated with tourism and boating	8	12
Reduce entrapment risk to dolphins during construction	7	9

2.3. THEMES AND PARTNERS

Based on the synthesis of team input on the alternatives, the team then identified a subset of eight alternatives to carry through to conceptual model development as part of identifying a common framework, key themes, and implementation partners needed for the Strategy. These alternatives included:

- Decrease entanglement in shrimp otter trawl gear
- Decrease interactions with skimmer trawl gear
- Decrease mortality and serious injury in menhaden fishery



- Decrease interactions with hook and line fisheries
- Decrease feeding associated with fish cleaning stations
- Decrease incidences of intentional harm to dolphins associated with commercial and recreational fishing
- Enhance response and data collection from live and dead stranded MM
- Develop strategies that mitigate disease and environment-related hazards

These alternatives were chosen for conceptual modeling because they were highly ranked within the weighted (Table 4) and unweighted consequence analysis (Table 3); had clear and direct pathways to MM benefit; and together were likely to capture the variety of themes and partnerships needed for the Strategy as well as be representative for development of a common action framework. In some cases, the wording of an alternative was refined for clarity or in response to discussion during the consequence analysis on how to best focus a potential action. For example, “Develop strategies that mitigate environment-related disease” was broadened to “Develop strategies that mitigate disease and environment-related hazards” to capture all disease and environmental stressors. The alternative to “Develop research to improve ecosystem and population-level understanding of MM in LA” was not conceptually modeled because it is an underlying activity for reducing uncertainty related to any potential action. “Decrease dolphin entanglements in crab pot gear” was not modeled because there is a remote likelihood or no known bycatch of bottlenose dolphins in Louisiana crab pots. There was also high uncertainty as to whether this is a significant threat given limited stranding evidence and absence of systematic observer coverage for this fishery. “Decrease intentional harm associated with recreational fisheries interactions” was expanded to “Decrease intentional harm associated with commercial and recreational fishing”. “Decrease illegal feeding of MM associated with recreational fishing” was not modeled because decreasing intentional feeding could be included as an activity within multiple actions focused on reducing negative interactions, in addition to having overlap with “Decrease feeding associated with fish cleaning stations” that was conceptually modeled. The other alternatives ranked poorly in the unweighted and weighted alternative analysis. Note, however, that all alternatives, as well as other potential MM restoration actions, are still under consideration for inclusion in the Restoration Plan that the Strategy will inform regardless of if they were conceptually modeled.

For each of the eight selected alternatives, the team developed a conceptual model (Figure 3) that included: (1) a draft set of sequenced, high level components (steps) that would be required to implement the alternative; (2) critical uncertainties that would benefit from being resolved during alternative refinement or as part of the Strategy; (3) NOAA’s role in alternative implementation; (4) types of partners that would be needed for implementation; (5) relevant ongoing or prior work that could inform the alternative or support implementation; and (6) the pathway of benefit, in other words, how the alternative would directly support MMs.

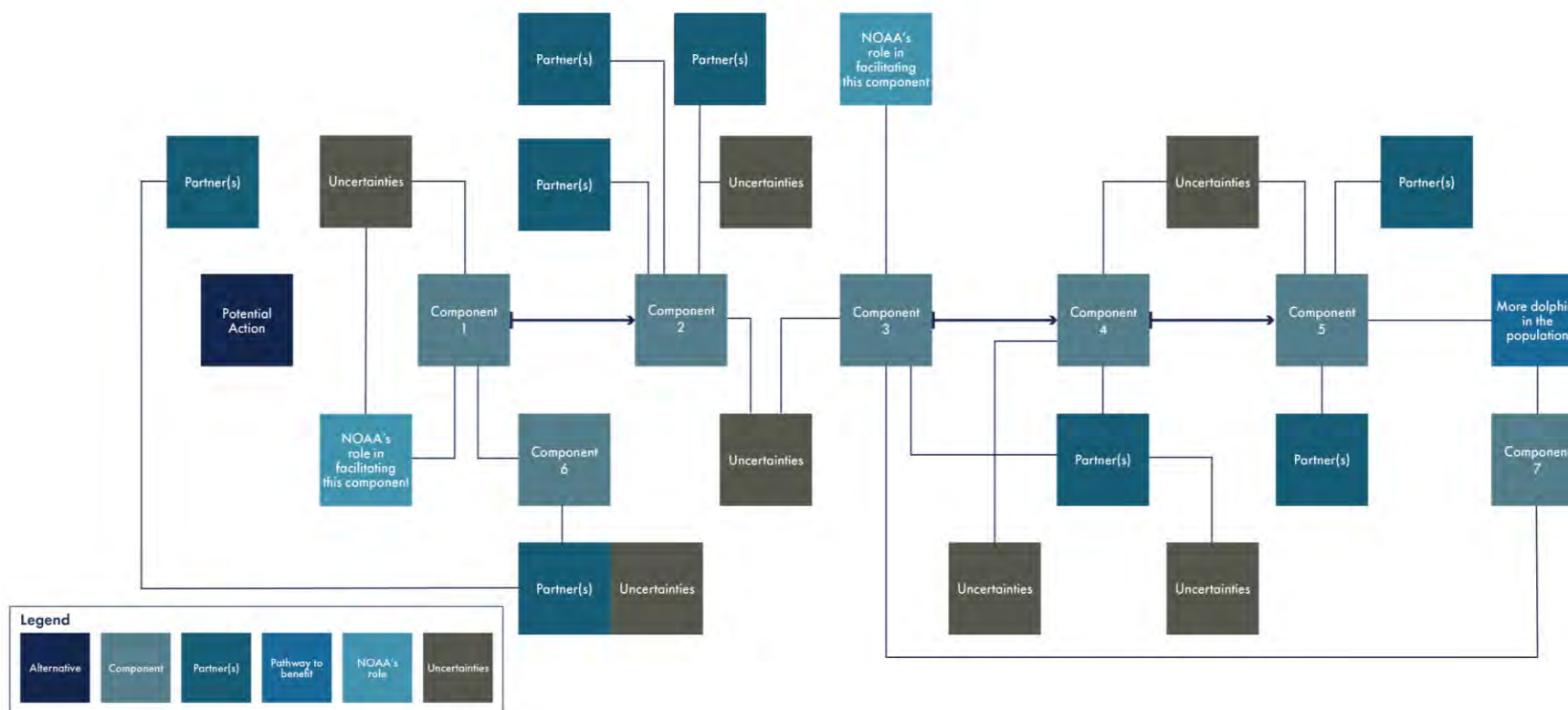


Figure 3. Conceptual model components used to inform Strategy development and identification of implementation partner groups.



Partner types were identified based on their role and potential engagement in implementation of each alternative. For example, a need for research to refine or adaptively manage an action could be undertaken by an academic or other research organization.

Next, the team reviewed the conceptual models to identify common themes across alternatives. The identification of themes also helped refine the types of partners that need to be engaged for Strategy refinement and, ultimately, implementation. For example, each of the alternatives has varying degrees of uncertainty associated with how to implement the alternative, the response of MM populations, or how things might evolve in the future. Research is therefore a cross-cutting theme, where the specific type of research – and the most appropriate partners to engage in that research – vary by alternative. Lastly, the team developed a common framework for restoration that captured the identified steps across all alternatives, and which could be applied to any potential restoration action in the future. The results of this analysis are presented in the next section.

3.0 OUTCOMES

The rapid prototyping process resulted in conceptual models for eight of the alternatives, which were then synthesized to build a common framework for MM actions, identify recurrent themes, identify the types of potential partners to engage in this process. The raw conceptual models were then refined to be in the common framework to ensure that framework was broadly applicable for MM restoration (Appendix).

3.1. COMMON THEMES AND RESTORATION ACTION FRAMEWORK

Although the specific details in each model vary by alternative, common themes emerged across all the conceptual models. These recurring themes included:

- The importance of building partnerships among academics, researchers, extension agents, NGOs, federal, and state agencies;
- The value of early and sustained engagement of partners;
- The importance of NOAA protected species managers and scientists being engaged throughout the framework;
- The need for state agencies to be engaged at different levels throughout the process depending on the approach;
- The need for collaborative problem-solving and co-production of solutions, particularly for reducing human impacts;
- The value of field-testing and evaluation to refine approaches, in most cases;
- The need for social science and social scientist engagement to integrate information across dolphin experts and local knowledge, as well as to support effective community engagement;
- The importance of being responsive to local Louisiana community needs, experience, and culture; and



- The role of stranding networks as an essential feedback loop for informing, monitoring, and evaluating restoration actions.

In addition to underpinning the Strategy, these recurrent themes served as guideposts for the team when developing a common framework for MM restoration action. The framework includes the steps shown in Figure 4 and detailed in Table 5. All actions include outreach, training, or engagement as essential for voluntary uptake, followed by monitoring and evaluation of success.

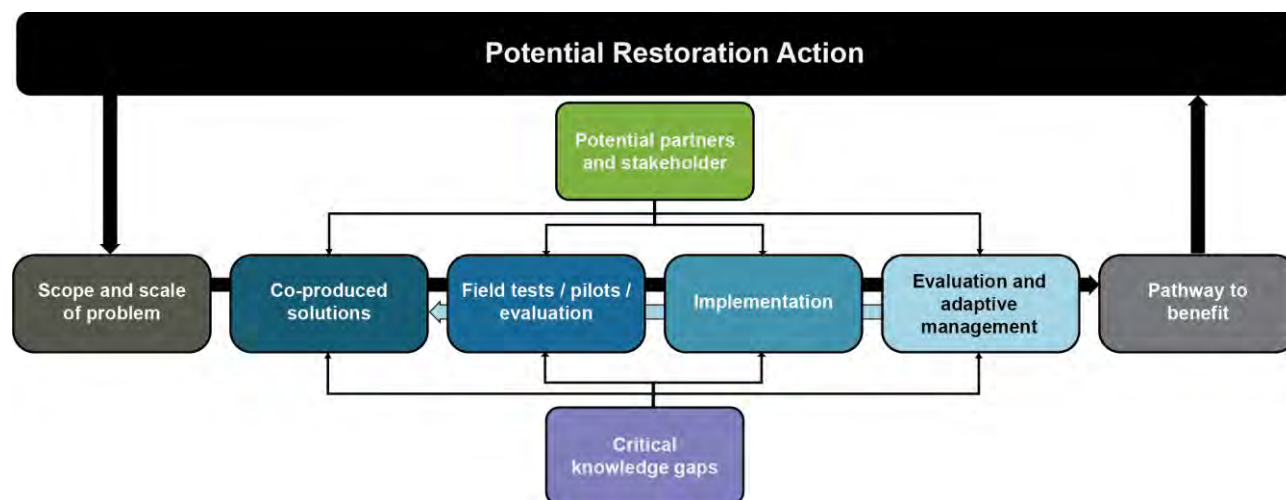


Figure 4. Visual diagram of the common framework (Table 5) developed for MM restoration actions. The framework starts with identification of a potential restoration action (black box), followed by scoping and scaling the associated problem (dark gray box). The framework then proceeds (denoted by black arrow in the background) through co-production of solutions, piloting, implementation, and adaptive management (blue boxes), with iteration as needed (light blue arrow in the background), ultimately resulting in a pathway to benefit (gray box) and successful implementation of the restoration action. Potential partners and stakeholders (green box) are engaged, and critical knowledge uncertainties (purple box) are identified and resolved, throughout the process.

Table 5. Steps for potential MM restoration actions. The specifics of each step vary by action, but each follows this general framework.

Framework Step	Description/Purpose
Scope and scale of problem	Briefly characterizes the human interaction or problem to be addressed, including what is known, what additional information is needed, whether relevant data can be compiled, and whether compatible efforts exist in other management or restoration efforts.
Potential partners and stakeholders	Identifies key partners and stakeholders across all stages of restoration, from co-production of outcomes to evaluation of restoration outcomes—including extension, research, training, outreach, and education. Different partners/stakeholders and combinations of those play different roles depending on the approach and stage of restoration.



Framework Step	Description/Purpose
Critical knowledge gaps	Identifies missing information relevant to each approach that should be considered throughout all aspects of restoration planning and implementation.
Co-produced solutions	Describes how each approach will collaboratively engage key partners/stakeholders to identify potential solutions/actions and priorities.
Field tests/pilots/evaluation	Characterizes piloting and/or small-scale testing of actions, identified based on co-produced priorities, to evaluate effectiveness and feasibility, and subsequently modify as needed before implementation.
Implementation	Describes execution of the most effective action(s) at scale, identified and refined based on outcomes of field testing/piloting outcomes. Implementation includes incorporating relevant strategies such as facilitating uptake of action(s), extension, training, outreach, education, etc.
Evaluation and adaptive management	Includes identifying measurable metrics for evaluating effectiveness of actions; monitoring outcomes in collaboration with partners, stakeholders, and academics; and applying adaptive management feedback loops. Adaptive management could address both uptake (how well strategies are being adopted), and success (how well adopted strategies are working).
Pathway to benefit	Describes the desired restoration outcome for bottlenose dolphins.

The framework is intentionally transferable. For example, other existing or future potential actions not identified as alternatives in the SDM rapid-prototyping process could be developed and implemented by applying the framework to define the specific steps needed for the action. In that case, actions could be developed by first identifying the scope and scale of the problem, then defining a pathway to benefit, and finally identifying the specific steps associated with that action within the framework to develop a conceptual model that links steps to address the problem through actions that ultimately benefit MMs.

3.2. PARTNER GROUPS

The same partnership groups appeared repeatedly in the conceptual model for alternatives evaluated in the SDM process, though their roles varied for each potential action. These groups included:

- NOAA and other federal agencies;
- State agencies that have interest in MM and the coastal zone and/or regulatory authority over human activities like fishing that can impact MM, such as the Louisiana Department of Wildlife and Fisheries (LDWF) and National Estuary Programs;
- Academic entities that can conduct research to reduce critical uncertainties in MM management;



- Non-governmental organizations (NGOs) with expertise in MM; and
- Extension programs that can facilitate outreach and local partner engagement, such as Louisiana Sea Grant.

The Institute and NOAA convened meetings with representatives from each partner group to introduce the conceptual models and Strategy concepts, explore how each organization might play an important role in collaborative restoration for dolphins, and discuss how this approach aligns with their existing strategic mission (Appendix B). The sessions were also an opportunity to identify overlapping and complementary areas of expertise and gauge mutual interest in joint problem solving across shared priorities: reducing human interactions with dolphins, enhancing stranding response, advancing disease surveillance and health data, and building public and community engagement.

Representatives of potential partner groups were also asked about their interest in working in a collaborative space and level of interest (e.g., co-produce, participate, or simply be informed), and whether they saw any risks, barriers, or conflicts that would need to be addressed. Feedback on structure, roles, and potential additional partners was also encouraged.

Meetings with key partners occurred between August 2025 and January 2026, mostly in person with some meetings occurring virtually (Appendix B). Several cross-cutting themes emerged across all groups:

- Strong support for the priority alternatives, with particularly high interest in addressing hook and line interactions with dolphins.
- Strong support for a collaborative, consortium approach to restore MMs.
- Agreement that this approach aligns well with their organizational missions.
- Agreement that the Strategy should focus on state-wide coastal waters, not just Barataria Bay.

Most groups discussed whether lessons learned from existing MM programs or groups in other geographic areas could be considered during Strategy development, such as the Sarasota Dolphin Research Program and the National Marine Mammal Foundation, given their integration of partnerships, academia, and MM health/stranding networks. Groups were also strongly supportive of incorporating academic programs into the Strategy, citing the conservation models of long-standing programs at Duke University and Oregon State University. This discussion led to plans to refine the workflow of Task 2 of this project to engage these entities as part of developing the Strategy and its Technical Appendix. One group, while cautiously supportive, expressed satisfaction with the current state of dolphin conservation in Louisiana, while acknowledging an opportunity for improved coordination and increased awareness.

4.0 CONCLUSION

The Institute applied a rapid-prototyping SDM approach to support NOAA in developing a Strategy for MM restoration. The SDM process led to the articulation of a decision context and fundamental objectives for the Strategy, including: improving MM viability over 20 years; minimizing implementation costs as part of maximizing the cost efficiency of MM restoration projects; increasing the effectiveness of adaptive management; maximizing long-term engagement and support for implementation of MM management; and limiting the staff implementation time needed as part of maximizing the efficiency of



MM restoration projects. The Institute and NOAA team then developed a list of alternative potential MM restoration actions by synthesizing input received during prior workshops held with SMEs in the MM field, then refining the list based on comparison to goals and activities outlined in the PDARP/PEIS. In addition, the Institute ensured all alternatives were unique from each other and had a direct pathway to MM benefit.

The Institute and NOAA team then evaluated these alternatives against the fundamental objectives and identified eight that are likely to be successful in supporting MM restoration in Louisiana. Conceptual models were developed for these eight that articulated the steps leading to benefits to MM, in addition to the associated uncertainties, needed partnership roles, and NOAAs involvement. The process prioritized SDM alternatives solely for the purpose of conceptual model development, and all potential MM restoration actions are still under consideration for inclusion in the Restoration Plan that will be informed by the Strategy. The conceptual models were used to build a common framework for MM restoration actions, as well as to identify key themes and partner groups for the Strategy. Individuals from the potential, representative partner groups were engaged for their feedback on the framework and to identify synergies and opportunities for future coproduction and Strategy implementation. Representative partners were supportive of the concepts presented and general process for developing and implementing the Strategy, and provided feedback such as the value of engaging with organizations that have development MM communities of care in other locations to share lessons learned and best practices that could be applicable to Louisiana.

Key outcomes of this task included identifying potential actions for MM restoration, and conceptual models for eight promising alternatives; developing a common framework of restoration action for the Strategy that can be readily applied to any action considered for the Restoration Plan; identification of common themes and types of partners that should be engaged during implementation; and determining that engaging organizations that have developed MM communities of care at other locations can provide valuable insights for the MM Strategy in Louisiana. In the next steps of the project, a Strategy outline will be developed based on the outcomes of this work, and external organizations with a history of success in establishing communities of care will be engaged with shared lessons learned encapsulated in a technical appendix.



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APPENDICES

APPENDIX A. CONCEPTUAL MODELS OF A REPRESENTATIVE SET OF POTENTIAL MM RESTORATION ACTIONS

Conceptual models were developed for a set of potential MM actions to facilitate the team's development of a common framework for the Strategy (refer to Section 3.0) and to identify key themes and types of partners to engage in a long-term community of care for dolphins in Louisiana. The raw conceptual models were then revised and refined to align to the common framework, which also tested its utility in describing components needed for potential restoration actions. The Institute and NOAA identified alternatives to conceptually model through a rapid prototyping application of SDM (refer to Section 2.0). These actions are examples only, and the Strategy may include additional actions or a modified list. Written and graphical versions of the conceptual models are provided below for each potential action.

A.1 DECREASE ENTANGLEMENT IN SHRIMP OTTER TRAWL GEAR

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-1, include:

1. *Scope and scale of problem*

The shrimp fishery in Louisiana targets two main species: brown and white shrimp. The most common types of otter trawl gear used offshore, and in some cases onshore, already incorporate turtle exclusion and bycatch reduction devices to mitigate sea turtle bycatch. Though bycatch of dolphins is known to occur (Soldevilla et al., 2016), there are currently no efforts targeted to reduce bycatch of dolphins in Louisiana. There are ongoing and complementary restoration efforts, including under the Regionwide Bottlenose dolphin and Texas City Y (TCY) restoration projects, applying similar advancements in gear modifications. The first step of this action would be a comprehensive assessment of shrimp fishery and dolphin bycatch in Louisiana state waters as well as lessons learned that could be applied to Louisiana.

2. *Potential partners and stakeholders*

This action would require multiple stakeholders working collaboratively with fishers and partners to co-produce solutions. Partnership opportunities could include, but are not limited to, working with academics, gear experts, NGOs, marine extensions, commercial fishers, dolphin researchers, resource managers, and the Louisiana MM stranding network. NOAA also has multiple potential roles to play throughout all aspects of the project, including management and oversight, bycatch analyses, and gear testing.

3. *Critical knowledge gaps*

Examples of uncertainties related to this action include lack of adequate knowledge about dolphin stocks and Louisiana inshore fishery distribution; fishers' interest level and incentives for engagement; potential language or cultural barriers; capacity and experience for gear research/testing; and limited observer coverage to measure effectiveness. There is



also a lack of knowledge about the motivation of shrimpers to pursue solutions, their willingness to engage, or how to engage this community effectively. Lastly, the shrimp fishing industry in Louisiana is facing significant economic challenges due to high fuel costs and competition with imported shrimp, which creates uncertainty in the effectiveness of this potential action in benefiting MMs (Southeast Fisheries Science Center, 2026).

4. *Co-produced solutions*

Some of the key partners needed to co-produce specific solutions under this action could include but not be limited to shrimpers, gear and dolphin experts, and community engagement partners in Louisiana. This group could work collaboratively to identify and explore the feasibility and effectiveness of different approaches that can, for example, reduce risk of dolphin entanglement in lazy lines. This action could also likely benefit from involving a fishery liaison and marine extension to engage fishing community, and potentially social science researchers on how to facilitate group engagement, communicate results, and support uptake of solutions by the fisher community.

5. *Field tests/pilots/evaluation*

Some aspects of this potential action that could require field testing and evaluation include balancing effectiveness in reducing harm to dolphins with minimizing impact to fishing activity, as well as identifying what approaches are most likely to be voluntarily used by the fishery. The field test step could therefore be comprised of testing and evaluating the feasibility and success of potential approaches identified in Step 4; working with fishers to incorporate, monitor, and evaluate tested approaches; and monitoring and assessing solution effectiveness in reducing injury and mortality to dolphins. Decisions on field testing and ultimately implementation would necessarily include assessing the likelihood of benefit in the context of the overall trajectory of shrimp fishing in Louisiana.

6. *Implementation*

Effective solutions for addressing MM harm through shrimp otter trawl gear interaction could be identified through field testing based on feasibility, likelihood of uptake by the shrimping community, and effectiveness in reducing harm to dolphins. Once identified, solutions could be implemented through activities that encourage uptake such as outreach, education, and training. In addition, NOAA and the community of care could explore incentives for encouraging use of identified best practices across the shrimp fishery and to provide training and/or resources to encourage incorporation of lazy line modification.

7. *Evaluation and adaptive management*

The evaluation and adaptive management phase could include NOAA collaborating with researchers, state agencies such as the Louisiana Department of Wildlife and Fisheries, and fisher community engagement partners to monitor, evaluate, and adaptively manage the implementation of this action. For example, metrics of success could include evaluating the percentage of the shrimp fishery that voluntarily incorporates gear modifications. If this percentage is lower than desired, surveys could be used to determine if the issue was



awareness or an issue with gear itself, and the outreach efforts, incentivization campaigns, or gear could be modified depending on the results. Other metrics such as assessing bycatch or benefits to dolphins could also be included.

8. *Pathway to benefit*

The pathway to benefit for this potential action is reducing serious injury and mortality to dolphins in shrimp otter trawl gear if there are fewer dolphin-gear interactions and if the gear itself limits entanglement.

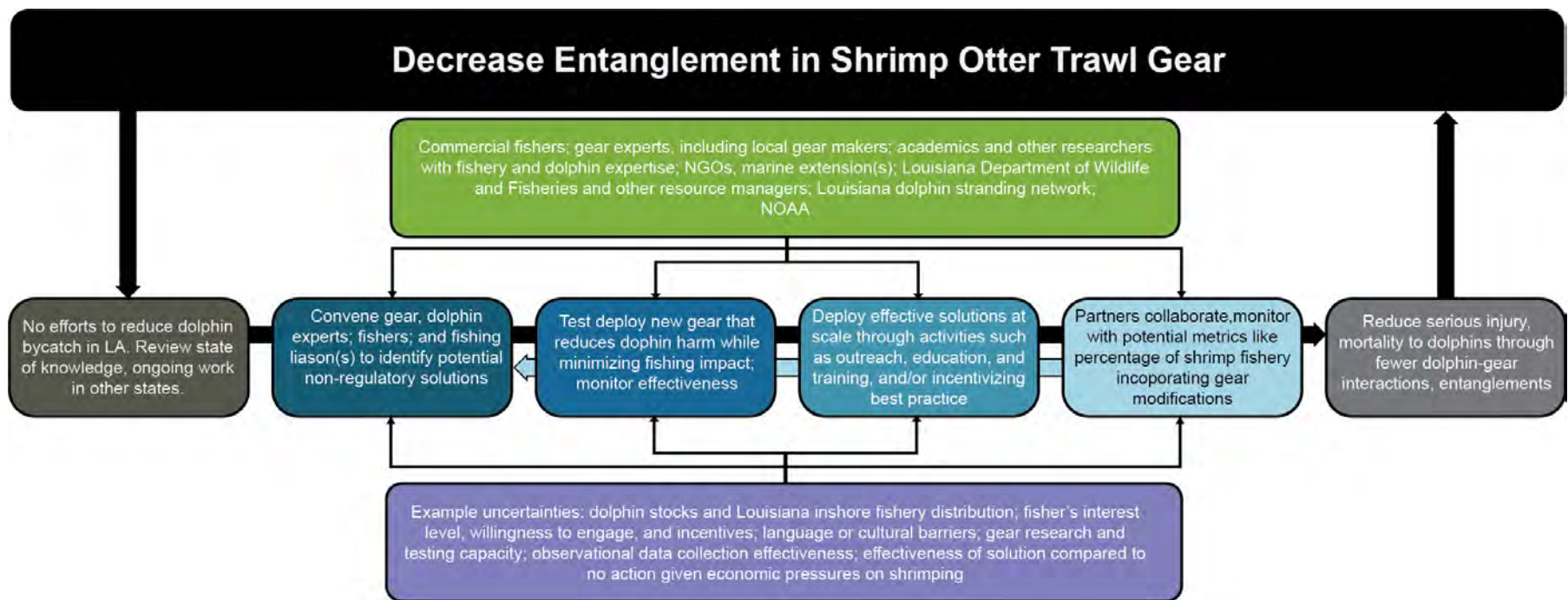


Figure A-1. Conceptual model for the potential MM restoration action to decrease entanglement in shrimp otter trawl gear.

A.2 DECREASE INTERACTIONS WITH SKIMMER TRAWL GEAR

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-2, include:

1. *Scope and scale of problem*

The Gulf skimmer trawl fishery is a shallow water nearshore fishery that uses large nets to push through the water column, just above the seafloor. While there is some minor risk to dolphins getting entangled or harmed by the gear, the more pervasive problem is dolphins ripping holes in fishing nets. Dolphins damage gear and lead to loss of catch with economic impacts for fishers, who then intentionally harm dolphins (e.g., shoot them) as a deterrent (Hataway & Foster, 2015). There has been prior interest in reducing this pathway to harm. A DWH restoration project approved to address this issue in state waters of Mississippi has been delayed (NOAA, 2022). In addition, NOAA researchers have conducted extensive research with skimmer trawl fishers to document interactions (e.g., use of Dual-frequency Identification SONar, DIDSON) and test potential gear modifications (e.g., use of high strength materials such as Ultra-High-Molecular-Weight-PolyEthylene, UHMWPE, in nets; Hataway & Foster, 2015); however, this work is not presently active due to lack of funding.

2. *Potential Partners and stakeholders*

Partnership and engagement opportunities could include working with skimmer trawl fishers in Louisiana, local gear/net makers, researchers, academics, marine extensions, resource managers, and the stranding network. NOAA could play multiple roles throughout all aspects of this action, including oversight, bycatch analyses, and gear testing. A fishery liaison could also be included as a mechanism to engage and communicate with industry.

3. *Critical knowledge gaps*

Uncertainties associated with this potential action include the type and extent of novel gear expertise in Louisiana and the availability of potential gear experts to work with fishers in testing and evaluating new or modified gear; the effectiveness and feasibility of implementing previously identified gear modifications, such as UHMWPE; and inadequate knowledge about bottlenose dolphin behavior and how those factors influence the number of skimmer trawl fisher-dolphin interactions or the effectiveness of potential solutions.

4. *Co-produced solutions*

The key partners necessary to convene to co-produce solutions under this action could include skimmer trawlers, gear and dolphin experts, academics, resource managers, and other relevant partners in Louisiana. This group could work collaboratively to identify and explore the feasibility of gear modifications to reduce damage from dolphin interactions and/or to reduce the number of interactions.

5. *Field tests/pilots/evaluation*

Some important aspects of this potential action are likely to require field testing and evaluation, including assessing previously identified gear modifications and/or new



approaches (e.g., alternate net materials, covers, etc.) that emerge from Step 4; the effectiveness of the gear in preventing damage from dolphins and the feasibility; and the potential for uptake. The field test step could therefore be comprised of testing and evaluating the feasibility and success of potential approaches; working with fishers to incorporate, monitor, and evaluate tested approaches; and monitoring and assessing solution effectiveness in reducing dolphin interactions with this fisher community.

6. *Implementation*

If field testing shows that identified solutions are effective, implementation could include activities such as convening gear experts with willing skimmer trawl fishers and dolphin behavior experts to pilot new gear modifications; developing and implementing a plan for uptake of voluntary gear modifications; and providing training and outreach to skimmer trawl fishers. There is the potential that the fishing community could be particularly amenable to this action given that dolphins currently have a negative impact on this community through gear damage, which could be reduced.

7. *Evaluation and adaptive management*

This step could include collaborations among academics, marine extensions, fishers, and dolphin experts on monitoring, evaluation, and adaptive management of new types of gear. For example, metrics of success could include evaluating the percentage of the skimmer trawl fishery that voluntarily incorporates gear modifications and the percent reduction in dolphin injuries or deaths from gunshot wounds. If these metrics are lower than desired, surveys could be used to determine if the issue was awareness or an issue with the gear itself, and the outreach efforts, incentivization campaigns, or gear could be modified depending on the results. Other metrics such as assessing benefits to dolphins or their behavior could also be included.

8. *Pathway to benefit*

The pathway to benefit for this action is that it could reduce the number of mortalities and serious injuries associated with the skimmer trawl fishery, which are typically related to retaliation for gear damage.

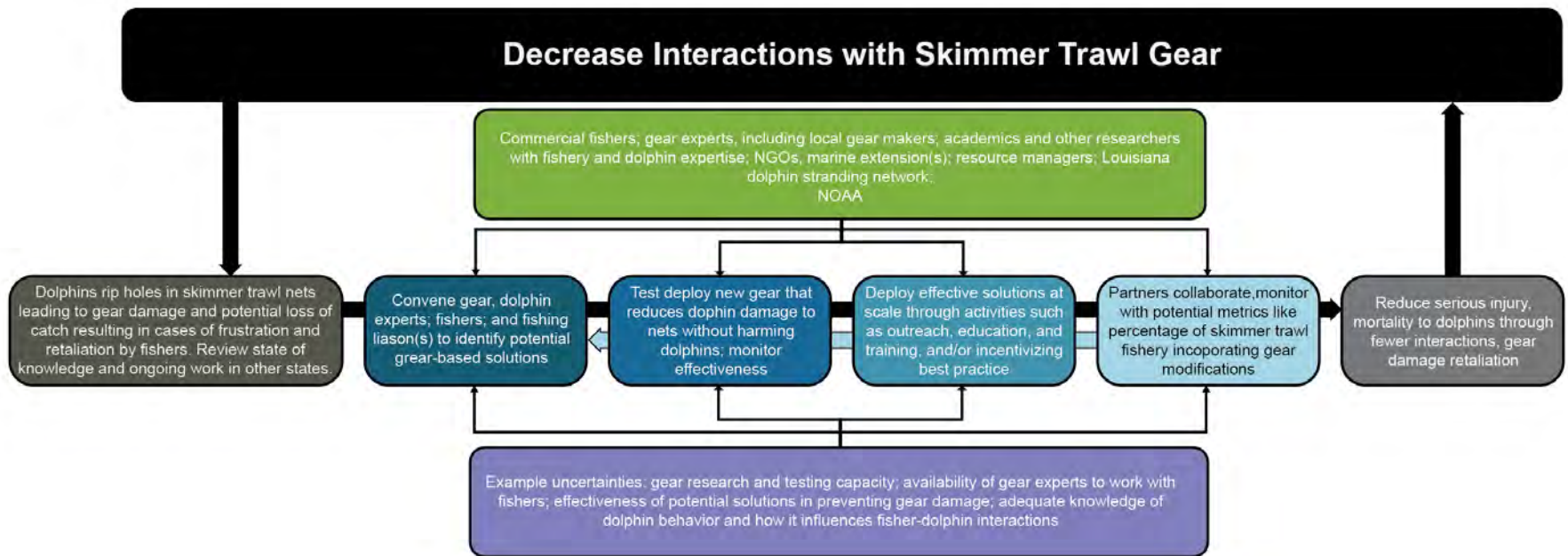


Figure A-2. Conceptual model for the potential MM restoration action to decrease interactions with skimmer trawl gear.

A.3 DECREASE MORTALITY AND SERIOUS INJURY IN MENHADEN FISHERY

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-3, include:

1. *Scope and scale of problem*

Historical and recent data has documented bycatch of bottlenose dolphins in the menhaden commercial fishery in Louisiana, and therefore the pathway to harm is relatively well understood compared to other issues (NMFS, 2022; NOAA Fisheries, 2025a; LA TIG, 2025a). More recently, there were 44 documented dolphin interactions in the menhaden fishery in 2022–2023 (Open Ocean TIG, 2024). The DWH Open Ocean Sea Turtle project tested methods to observe the Gulf of America Menhaden Fishery and collected data on the nature and extent of interactions with sea turtles and dolphins. While there were few sea turtle interactions, a high number of dolphin interactions, including serious injuries and mortalities, were documented. There is also ongoing work to address this issue including NOAA, the menhaden fishery, and partners exploring potential solutions such as backing down, or other practices. In addition, LDWF has supported various studies as part of its role in managing aspects of different fisheries in state waters.

2. *Potential partners and stakeholders*

Partnership opportunities could include working with the menhaden fishing industry, such as captains and crews; resource managers, such as LDWF and NOAA; NGOs, such as the Marine Stewardship Council or the Louisiana Commercial Fisheries Coalition, LLC; dolphin and fishery researchers, such as academics, marine extensions, and the stranding network. NOAA has multiple potential roles to play throughout all aspects of the project, including oversight, bycatch analyses, establishing best practices, and monitoring.

3. *Critical knowledge gaps*

Uncertainties associated with this potential action include the level of engagement of the menhaden fishery owners, captains, crew and potential partners; applicability of best practices used in similar situations (e.g., for reducing bycatch by the Eastern Tropical Pacific purse seine fishing industry) are applicable and transferrable to Louisiana; whether potential best practices would be implemented across the fishery on a sustained basis; the viability of video monitoring as a feasible tool for evaluating success; and lack of knowledge about the impact of bycatch on MM stocks, including and inadequate knowledge about bottlenose dolphin abundance and behavior.

4. *Co-produced solutions*

The key partners necessary to co-produce solutions under this action could include dolphin behavior experts, menhaden/purse seine fishery experts, academics, federal and state agencies, and menhaden fishery representatives to explore potential voluntary best practices that reduce bycatch and to select the most promising best practices to test. A fishery liaison could also be included as a mechanism to engage and communicate with industry.



5. *Field tests/pilots/evaluation*

Some important aspects of this potential action likely to require field testing and evaluation include assessing best practices that emerge from Step 4, including the effectiveness in reducing bycatch or injury and the feasibility and potential for uptake. The field test step could therefore be comprised of testing and evaluating the feasibility and success of potential approaches; working with fishers to incorporate, monitor, and evaluate tested approaches; and monitoring and assessing solution effectiveness.

6. *Implementation*

If field testing supports that identified solutions are effective, implementation could include activities such as broader outreach to the menhaden fishery owners, captains, and crew for widespread uptake of best practices and/or gear modifications.

7. *Evaluation and adaptive management*

This step could include collaborations among academics, marine extensions, owners, fishers, and dolphin experts on monitoring (e.g., through video monitoring), evaluation, and adaptive manage solutions. For example, metrics of success could include evaluating the percentage of menhaden fleet that incorporates identified best practices. If this percentage is lower than desired, the menhaden fishery owners and/or captains could be engaged to identify what specific aspects of the identified practice are impractical to implement and modify based on the feedback. Monitoring dolphin bycatch through video monitoring and dolphin abundance and/or behavior are metrics that could also evaluate success.

8. *Pathway to benefit*

The pathway to benefit for this potential action could be that fewer dolphins are killed and seriously injured by menhaden purse seine fishing.

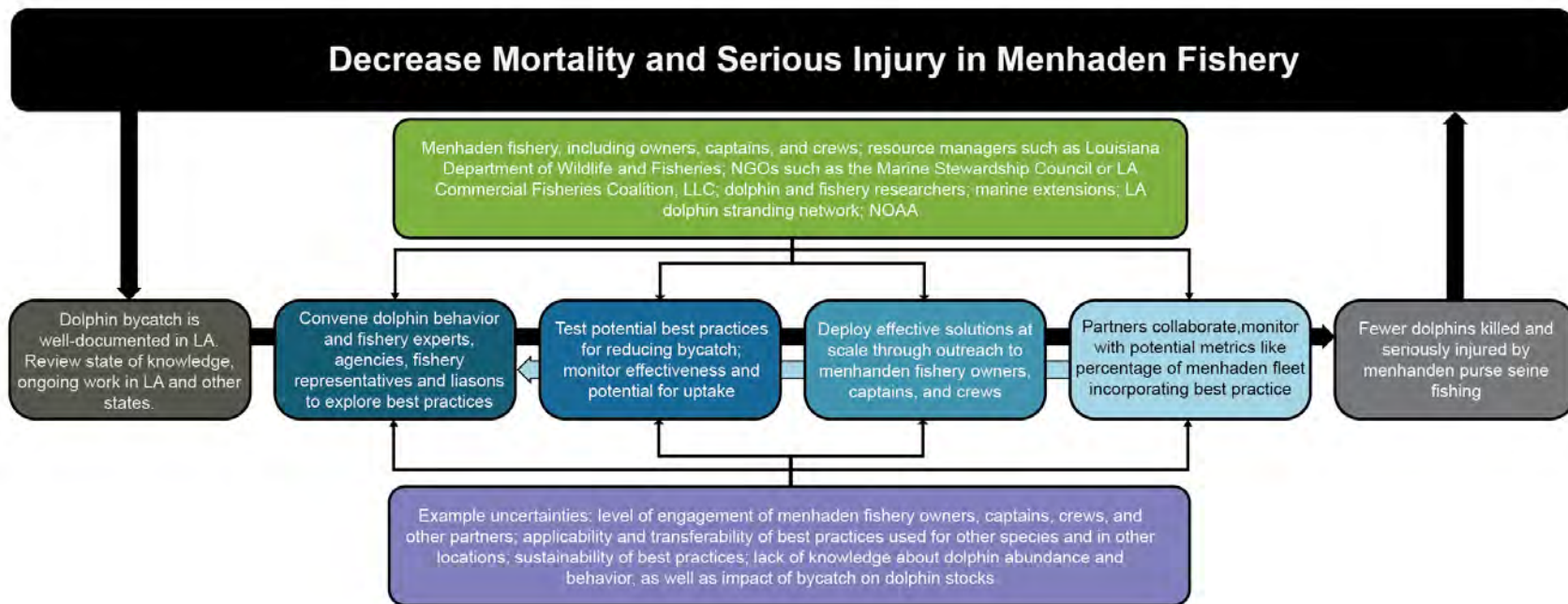


Figure A-3. Conceptual model for the potential MM restoration action to decrease mortality and serious injury in the menhaden fishery.

A.4 DECREASE INTERACTIONS WITH HOOK AND LINE FISHERIES

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-4, include:

1. *Scope and scale of problem*

Dolphin interactions with hook and line fisheries in Louisiana are a well-known threat (see LA TIG, 2025a). Twenty-eight percent of stranded dolphins with evidence of fishery interactions were from hook and line, and 46% of Barataria Bay dolphins have evidence of scarring from hook and line gear (Zolman et al., In press). There is an ongoing Regionwide restoration project focused on understanding dolphin/hook and line interactions across the northern Gulf. The DWH restoration project “Return Em Right” (<https://returnemright.org/>) and the Louisiana CREEL program (<https://www.wlf.louisiana.gov/page/lacreel>) are also focused on best practices for hook and line fishers and reducing bycatch of different species. NOAA also has existing hook and line fisher outreach (e.g., dolphin friendly fishing tips) which can be built upon under this activity.

2. *Potential partners and stakeholders*

Partnership opportunities could include working with hook and line fishers and associated community groups; researchers including those focused on social science as well as dolphin behavior; other academics; hook and line gear experts; marine extensions; resource managers; and the stranding network. NOAA has multiple potential roles to play throughout all aspects of the project, including being responsible for management of dolphins and hook and line fisheries and expertise across all aspects of this issue.

3. *Critical knowledge gaps*

Examples of uncertainties related to this potential activity include lack of knowledge about the scope, scale, frequency, and nature of dolphin interactions with the hook and line fishery in Louisiana; inadequate knowledge about bottlenose stocks and abundance and the impacts of hook and line interactions on it; inadequate understanding of dolphin behavior associated with interactions; lack of knowledge about the human dimension and how to incentivize and/or engage with hook and line fishers; and how to evaluate success given lack of baseline data.

4. *Co-produced solutions*

Co-production of solutions could be based on outcomes of social science studies followed by convening dolphin experts, academics, and fishers together in field research to identify potential solutions. For example, identifying potential mechanisms to safely deter dolphins from interacting with hook and line gear or best practices for fishers to reduce interactions such as limiting intentional or unintentional feeding. This action could also likely benefit from a fishery liaison and marine extension to engage fishing communities.

5. *Field tests/pilots/evaluation*



Some important aspects of this potential action that could require field testing and evaluation include assessing best practices that emerge from Step 4, including the effectiveness in reducing bycatch or injury and the feasibility and potential for uptake. The field test step could therefore be comprised of testing and evaluating the feasibility and success of potential approaches; working with fishers to incorporate, monitor, and evaluate tested approaches; and monitoring and assessing solution effectiveness.

6. *Implementation*

Implementation of this action could be based on effectiveness assessed during field tests as well as social science research and outcomes on how to best engage the fishing community and encourage or incentivize use best practices. This could also include implementing outreach actions to inform fishers, such as social media-based campaigns, dock visits, community events, or other engagement mechanisms, as well as incorporating fishery liaisons.

7. *Evaluation and adaptive management*

This step could include collaborations among fishers, academics, social scientists, resource managers, the stranding network, and others to monitor, evaluate, and adapt solutions. For example, success metrics could include things such as the number of stranded dolphins each year with evidence of recent injury from hook and line interaction. If this number does not decrease year-over-year, hook and line fishers could be re-engaged to determine if this outcome is a result of lack of awareness or improvements needed to refine best practice to encourage uptake and/or effectiveness, which is then used to adjust the guidance or outreach accordingly. Other metrics could include social science tools to evaluate uptake of solutions by fishers as well as any changes in their behavior or knowledge, and research that focuses on dolphins such as changes in dolphin behavior if applicable.

8. *Pathway to benefit*

The pathways to benefit for this potential action are to (1) decrease serious injury and mortality of dolphins in hook and line gear by altering fishing practice; and (2) prevent expansion of fishing practices such as feeding that might lead to increased interactions.

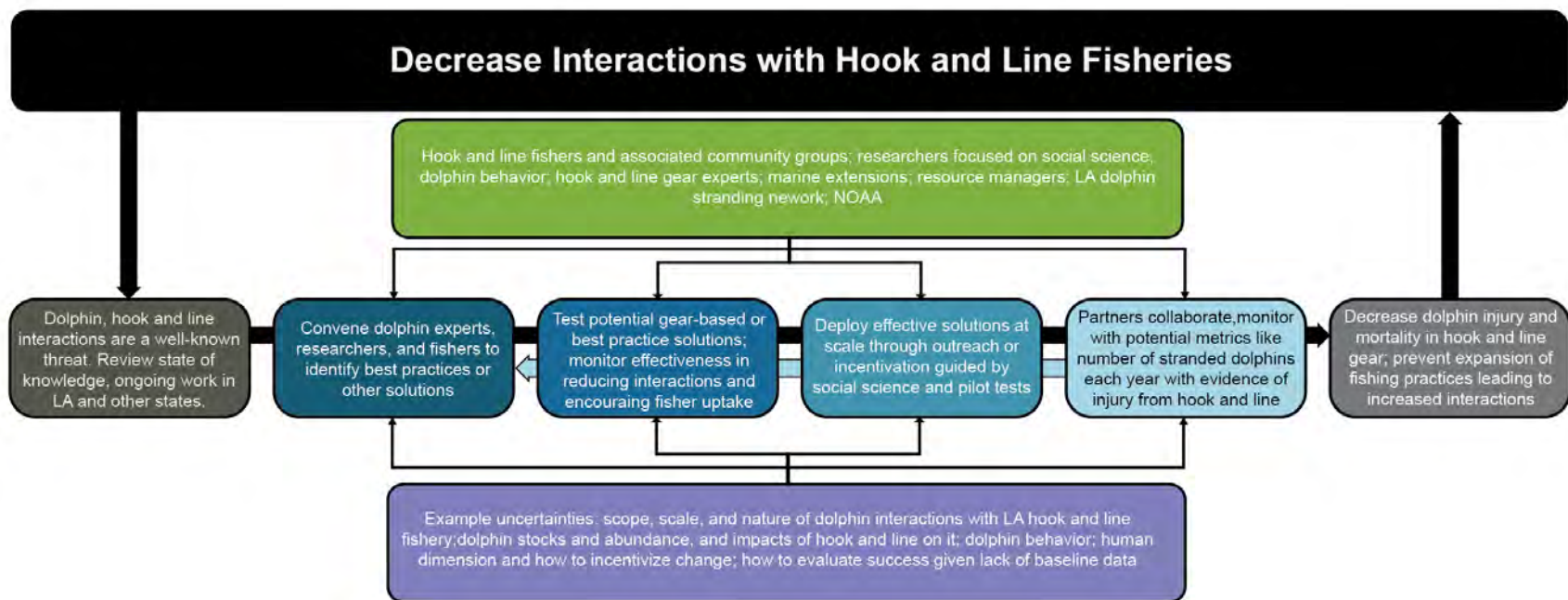


Figure A-4. Conceptual model for the potential MM restoration action to decrease interactions with hook and line fisheries.

A.5 DECREASE FEEDING ASSOCIATED WITH FISH CLEANING STATIONS

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-5, include:

1. *Scope and scale of problem*

Researchers and managers hypothesize that intentional or unintentional feeding of bottlenose dolphins at fish cleaning stations may promote depredation or scavenging behavior by dolphins because they associate fishers with food (NMFS, 1994; Powell & Wells, 2011). National Marine Mammal Foundation (NMMF) researchers noticed that dolphins may be learning this association specifically at Grand Isle, Louisiana fish cleaning stations, where some dolphins regularly feed on fishers' discards. This learned behavior may promote subsequent human interactions such as dolphin begging, depredation, and increased risk of injury or mortality from fishery interactions and vessel strikes. This potential action would reduce the risk of dolphin injury and mortality due to learned behavior of associating fishers with food. There is no known ongoing work related to this alternative. However, the NMMF has historical data on Barataria Bay dolphins, fisher interactions, and known individual dolphins who regularly feed on fisher discards at cleaning stations. In addition, the DWH Regionwide restoration project addressing dolphin hook and line interactions may have some overlap with fishers in Louisiana.

2. *Potential partners and stakeholders*

Partnership opportunities could include fishers who use cleaning stations; researchers such as NMMF or members of the academic community; marine extensions; NGOs; private fish cleaning services; marinas; and resource managers. NOAA has multiple roles to play throughout all aspects of the project including being responsible for management of dolphins and hook and line fisheries, as well as expertise in many aspects of this issue.

3. *Critical knowledge gaps*

Uncertainties related to this potential action include the frequency, nature, and type of interactions between fishers and dolphins at cleaning stations; how widespread the issue is amongst dolphin individuals; whether dolphins are known to engage in risky behavior such as depredation and if feeding at cleaning stations increases those behaviors; and if dolphins are targets of retaliation away from fish cleaning stations. It is also unknown how many fishers who utilize cleaning stations are willing to engage in the effort and the degree to which solutions would be scalable for the recreational fishing community, which is comprised of thousands of anglers.

4. *Co-produced solutions*

Co-production of solutions could be based on outcomes of social science and dolphin behavioral studies followed by convening dolphin experts, academics, fishery liaisons, and representatives of the recreational fishing community to identify potential solutions. For



example, solutions may include best practice to avoid unintentional feeding as well as methods of outreach to raise awareness and discourage intentional feeding.

5. *Field tests/pilots/evaluation*

Some important aspects of this step could include field testing and evaluation to assess best practices identified in Step 4, such as their effectiveness in reducing intentional or unintentional feeding of dolphins at fish cleaning stations. The field step could therefore be comprised of testing and evaluating the feasibility and success of potential approaches at select locations, and monitoring and assessing solution effectiveness.

6. *Implementation*

Implementation of activities could be based on the effectiveness and outcomes of pilot tests and social science research on how to effectively scale solutions for Louisiana.

Implementation could include various types of on- or off-site informational campaigns to inform fishers of best practice and the importance of not feeding dolphins at fish cleaning stations.

7. *Evaluation and adaptive management*

This step could include collaborations among fishers, academics, social scientists, and others, to monitor, evaluate, and adapt solutions. For example, metrics of success could include observed intentional or unintentional feeding of dolphins at fish cleaning stations. If this number does not decrease, social scientists and/or fishers could be re-engaged to determine if this outcome is a result of improvements needed to refine best practice to avoid unintentional feeding or to increase the effectiveness of information campaigns, which is then used to adjust the guidance or outreach accordingly. Other metrics could be focused on observing number and frequency of dolphins and their behavior at fish cleaning stations.

8. *Pathway to benefit*

The pathway to benefit for this potential action is a likely reduction in risk of dolphin injury and mortality associated with recreational fishing activity due to learned behavior of associating fishers with food.

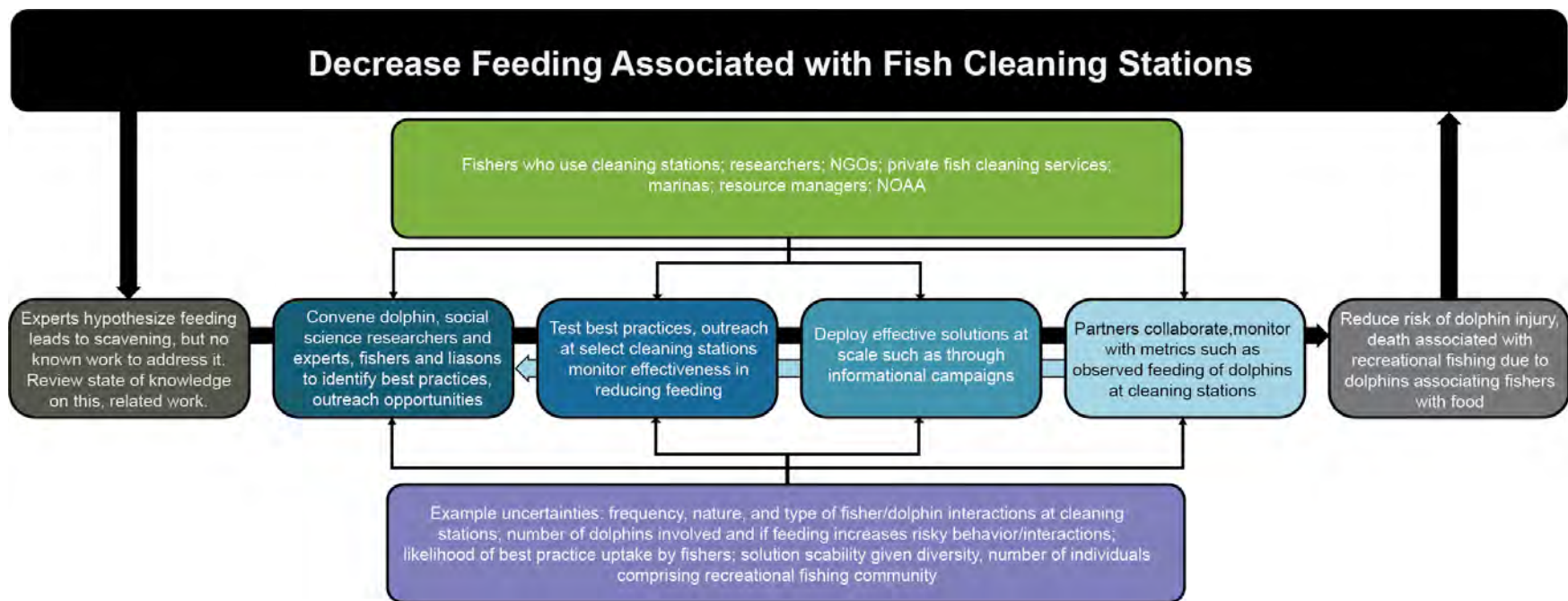


Figure A-5. Conceptual model for the potential MM restoration action to decrease feeding associated with fish cleaning stations.

A.6 DECREASE INCIDENCE OF INTENTIONAL HARM TO DOLPHINS ASSOCIATED WITH COMMERCIAL AND RECREATIONAL FISHING

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-6, include:

1. *Scope and scale of problem*

Retaliation by fishers resulting in mortality and sublethal effects has been well documented in Louisiana. Based on strandings data from 2003–2024, 32% of stranded dolphins with evidence of intentional harm were found in Louisiana. NMMF conducted an informal analysis of Barataria Bay health assessment data and found 13% of animals had healed wounds consistent with retaliation (NOAA, 2025). There is no local, ongoing work in Louisiana that directly addresses intentional harm. However, there are other geographic areas (e.g., California, the Mediterranean) that struggle with intentional harm to MMs who depredate or scavenge during fishing activities (Bearzi et al., 2011; Barcenas-De La Cruz et al., 2018; Marine Mammal Commission, n.d.). In addition, NOAA summarized nationwide work on non-lethal deterrents for all species of MMs which are summarized in a technical memo (Long et al., 2015) and issued a proposed rule on guidelines for non-lethal deterrents in 2020 that to date has not been finalized. NOAA’s Marine Fisheries Advisory Committee also conducted a survey in 2024 to gather knowledge and perceptions about the nature of MM interactions and use of deterrents currently employed by commercial, recreational, and tribal fishers; aquaculture farmers; and marina and coastal property owners and managers. However, the results were not finalized and are not currently available. An ongoing hook and line project funded through the NRDA Regionwide TIG is likely to be synergistic this effort and may gather high level, coarse data on fishers and potential frustration. Note, this action is synergistic with another potential action focused specifically on hook and link interaction (refer to A.4) but is more generally focused on intentional harm regardless of the underlying driver.

2. *Potential partners and stakeholders*

Potential partners could include hook and line fishers or other representatives of the fishing community; gear experts; dolphin behavior experts; social science and fishery researchers including academics; marine extensions; resource managers; and the stranding network. NOAA has multiple potential roles to play throughout all aspects of the project, including being responsible for management of dolphins and hook and line fisheries and expertise across all aspects of this issue.

3. *Critical knowledge gaps*

There are many uncertainties associated with this potential action including lack of understanding about what sectors of fishers are likely to engage in intentional harm; the scope and nature of interactions that lead to frustration, such as scavenging, culling, feeding, depredation; what fishers are specifically experiencing that leads to frustration and intentional harm, such as perceived or real economic loss, damage to gear, competition for fish, and the like; the effectiveness of non-harmful deterrents that could reduce negative



fisher-dolphin interactions; dolphin behavior and cognition, and how that impacts interactions; how intentional or unintentional feeding of dolphins may contribute to depredation or predation by dolphins; and lack of information the impact of intentional harm to dolphin stocks including abundance and distribution. There is also uncertainty in what methods can be used to evaluate success given that intentional harm is rarely observed and evidence of intentional harm in recovered dolphins can be difficult to detect without expensive or invasive procedures that may not be used in all cases by the stranding network (e.g., bullets in dead dolphins may sometimes only be detected by conducting computed tomography [CT] scans).

4. *Co-produced solutions*

Co-production of solutions could be based on outcomes of social science and dolphin behavioral studies followed by eliciting input from fishers, academics and other researchers, dolphin behavior experts, resource managers, fishery liaisons, stranding network practitioners, marine extension agents, and others to co-produce a suite of potential solutions. These solutions could include awareness campaigns or, depending on the outcomes of the initial studies, development of best practices or gear modifications to limit negative human-dolphin interactions contributing to intentional harm.

5. *Field tests/pilots/evaluation*

Some important aspects of this potential action likely requiring field testing and evaluation include assessing potential solutions that emerge from Step 4, including the effectiveness in of non-lethal deterrents to limit negative interactions between fishers and dolphins. This could include joint research that engages fishery experts, dolphin experts, academics, and others to assess the effectiveness.

6. *Implementation*

Implementation of activities could be based on the effectiveness and outcomes of pilot tests and social science research on how to effectively scale solutions for Louisiana. For example, information could be elicited from fishers, communication experts, and marine extension agents could be used to scale an outreach or training campaign that encourages human behavior change if field testing supports that solution as effective in reducing intentional harm.

7. *Evaluation and adaptive management*

This step could include working with fishers; social science and dolphin researchers including academics; and others to evaluate the effectiveness and uptake of identified solutions. Metrics of success are difficult to identify for this potential action given that one of the key uncertainties is how to effectively quantify the magnitude and drivers of intentional harm. However, social science data collection such as anonymous surveys could be explored. Strandings data could also provide insightful data for evaluation and adaptive management.

8. *Pathway to benefit*



The pathway to benefit for this potential action is to likely reduce the risk of dolphin injury and mortality to bottlenose dolphins from intentional harm by increasing public awareness and/or sympathy towards dolphins and/or by decreasing negative human-dolphin interactions.

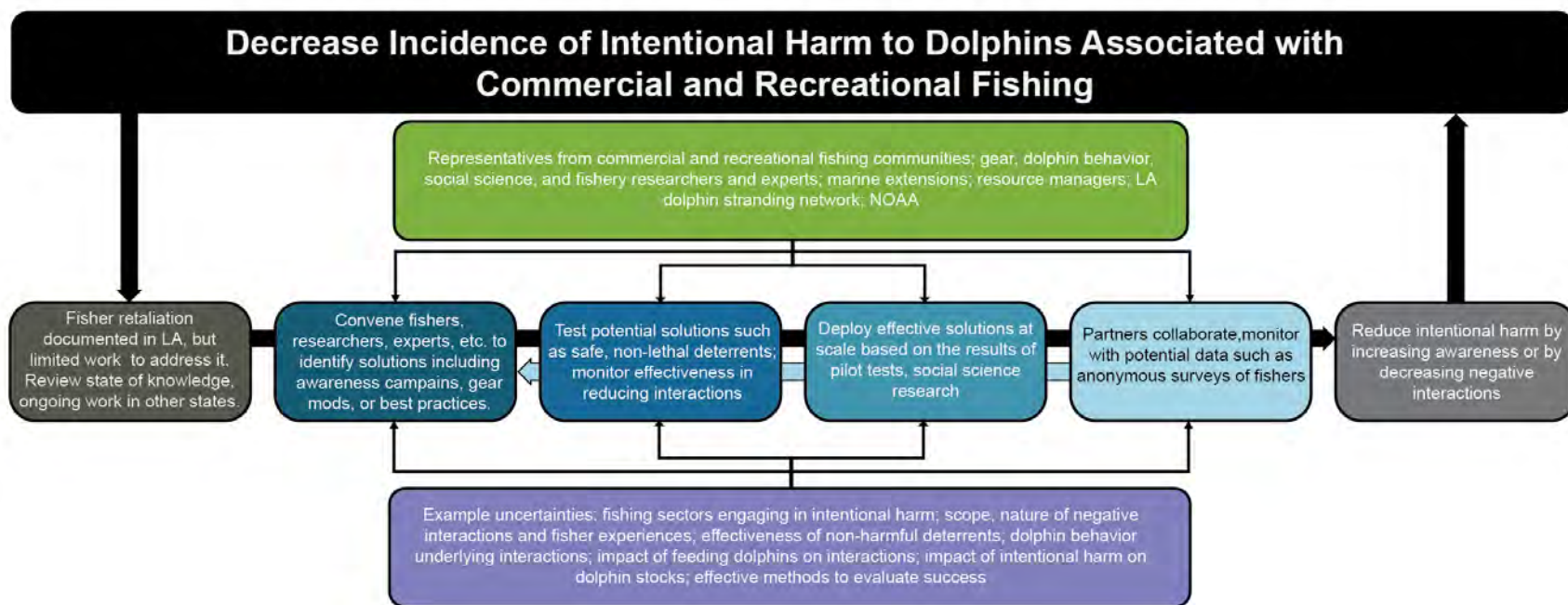


Figure A-6. Conceptual model for the potential MM restoration action to decrease incidence of intentional harm to dolphins associated with commercial and recreational fishing.

A.7 ENHANCE RESPONSE AND DATA COLLECTION FROM LIVE AND DEAD STRANDED MARINE MAMMALS

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-7, include:

1. *Scope and scale of problem*

NOAA Fisheries Marine Mammal Health and Stranding Response program oversees and authorizes stranding response nationwide with partner organizations to respond to and in some cases, rehabilitate stranded animals. In Louisiana, Audubon Aquarium Rescue (AAR) is the only NOAA-authorized organization to respond to and rehabilitate MMs. AAR works with a network of trained volunteers and partners to help respond to MM strandings throughout the state. Most strandings involve dead animals and responders conduct necropsies and collect data to understand disease, illness, and human threats such as entanglement, vessel strikes, or other issues. The LAMMSN also responds to live animals that are entrapped or in need of rehabilitation. This action would save animals that otherwise might have died without an enhanced level of response or intervention, in addition to collecting data that informs restoration, monitoring and evaluation of success of this and other actions.

2. *Potential partners and stakeholders*

Potential partners for this potential action could include resource managers, researchers including the academic community, marine extension agents, other local and state agencies and parishes. NOAA has a key leadership role in all aspects of this potential action and specifically authorizes MM stranding response under the MMPA.

3. *Critical knowledge gaps*

Uncertainties with this potential action include how to adapt, expand, or enhance ongoing efforts along Louisiana's complex and often remote coastline, where MM strandings are difficult to detect or respond to. It is also unknown where and how to target expansion or how effective expanded engagement might be. Stranding rates are also unknown in remote areas and where strandings are difficult to detect, such as in marsh or otherwise vegetated areas.

4. *Co-produced solutions*

The key partners necessary to co-produce solutions under this action could include authorized stranding responders, NGOs, researchers including academics, dolphin experts, and resource managers. Co-production could include conducting gaps and needs analysis that explores topics such as current capacity, skills, training, equipment, and diagnostics compared to the levels needed to achieve a desired future geographic coverage or capacity, as well as prioritizing needed tools, technologies, or expanded partnerships.

5. *Field tests/pilots/evaluation*



Although a stranding network already exists in Louisiana, there may be options for exploring additional ways of piloting outreach and engagement activities.

6. *Implementation*

Implementation of this action could include collaborating with key partners and stakeholders, including the existing stranding network, to implement priorities identified in the gaps and needs analysis. Implementation could include enhancing stranding response, data collection, data entry, and/or reporting, as well as recruiting and training volunteers with a specific focus on targeting needs highlighted in the assessment.

7. *Evaluation and adaptive management*

This step could include working to synthesize annual stranding data to assess the outcomes of improvements made in response to the gaps and needs analysis, as well as to inform restoration and management of other actions taken under the MM Strategy or by other entities (e.g., the Louisiana TIG). Potential metrics of success are difficult to identify ahead of the gaps and needs assessment along with the unpredictable and variable natures of strandings events themselves. Some examples could include measuring changes in capacity, or other metrics identified through the analysis.

8. *Pathway to benefit*

The primary pathway to benefit for this potential action is saving MMs that otherwise may have died from entanglements, chemical or oil spills, tidal strandings, or other causes without an enhanced level of response or intervention. A secondary pathway to benefit is improved data that informs restoration, monitoring, and evaluation of success for other actions taken under the Strategy or otherwise.

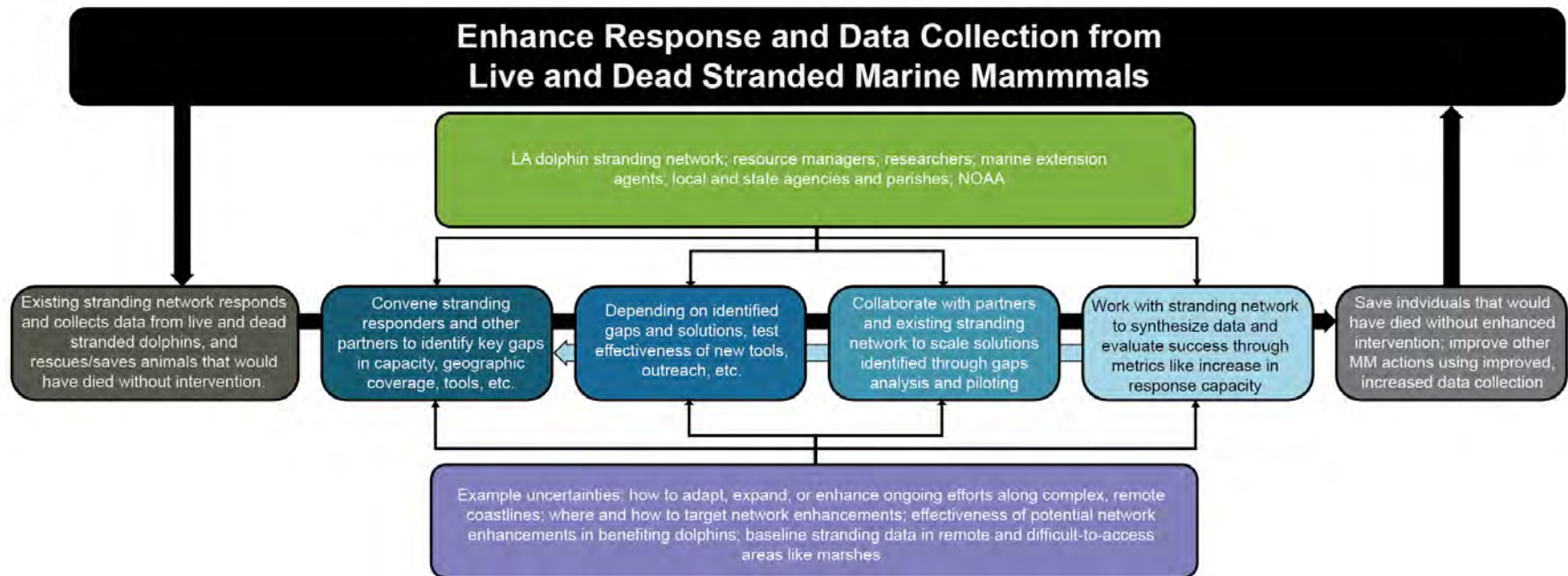


Figure A-7. Conceptual model for the potential MM restoration action to enhance response and data collection from live and dead stranded marine mammals.

A.8 DEVELOP STRATEGIES THAT MITIGATE DISEASE AND ENVIRONMENT-RELATED THREATS

The steps in the common framework (Table 5, Figure 4) and for this potential action, visualized in Figure A-8, include:

1. *Scope and scale of problem*

Bottlenose dolphins in Louisiana are still recovering from the DWH oil spill and are exposed to many human-caused threats (LA TIG, 2025a). In addition, they are exposed to a range of diseases triggered by or exacerbated by environmental stressors. Understanding disease and environmental related threats is important for restoration because it helps inform the cumulative effects of stressors on these animals and the health of dolphin populations. Understanding dolphin health and determining what impacts them can serve as indicators of ocean health and potential implications for human health, given they share the same habitat and eat the same fish. This action would reduce disease-related mortality or morbidity of dolphins and thereby serve to enhance their resilience and survivability. In rare cases, individual animals may be saved that otherwise might have died without intervention, for example, through freshwater exposure. There are several datasets and reports related to this action that include, but are not limited to, the NMMF in partnership with NOAA and others' historical data sets related to health of dolphins in Barataria Bay, LA (Smith et al., 2022); Mississippi State University's investigation into diseases in MS dolphins, some of which overlap in Louisiana; two comprehensive draft reports: "Evaluating the threats of disease, contaminants, and environmental hazards on Louisiana dolphin health: A literature review, conceptual model, and health assessment plan" (LA TIG, 2025b), and the "Freshwater Response, Scientific/Impact Assessment, and Decision-making Strategy Report" (LA TIG, 2025c); Health MAP, a centralized, web-based data system designed to integrate MM health data with oceanographic conditions and other information to help detect emerging threats and prioritize conservation efforts (NOAA Fisheries, 2025b); and the NOAA led MM and unusual mortality event program (NOAA Fisheries, 2026).

2. *Potential partners and stakeholders*

Potential partners for this potential action could include NOAA managers; MM veterinarians, pathologists, epidemiologists, and other experts in MM health; researchers including those from the academic community; non-profits; resource managers; the Marine Mammal Commission; and the stranding network. NOAA has a key leadership role in all aspects of this potential action, including through the coordination across the efforts described above and in implementation, provision of expertise, and oversight.

3. *Critical knowledge gaps*

Uncertainties related to this potential action include lack of information regarding types of diseases and disease trends; how disease contributes to or exacerbates other stressors – including those related to human activities—as part of understanding cumulative effects; sources of pollutants; environmental drivers of disease in Louisiana; how to manage the release of rehabilitated animals that were exposed to disease such as *Brucella*; what



technologies for treating or addressing disease or its drivers are ready and feasible for implementation and/or factors limiting development; how to effectively mitigate or treat disease in dolphins and dolphin populations; how to ensure long-term sustainability for diagnostics and sample archiving; and inadequate knowledge about dolphin distribution, stock structure, and populations as it relates to disease and disease impacts.

4. Co-produced solutions

The key partners necessary to co-produce solutions under this action could include experts in MM disease in and beyond Louisiana, as well as researchers (academic, NGO) and the stranding network. Activities could include working with those groups to characterize what is known and currently being measured regarding MM disease in Louisiana, including potential emerging threats, and/or convening an expert working group to identify high priority gaps and needs—including investigations, data integration, and analysis—to develop a mitigation and framework plan specific to Louisiana.

5. Field tests/pilots/evaluation

The need for and potential benefit of field testing and evaluation for this potential activity could be evaluated depending on the outcomes of the needs assessment conducted in Step 4. There are multiple potential opportunities that could be tested such as direct intervention to respond to disease when feasible; exploring and advancing new technologies such as the remote dart delivery of antibiotics; identifying and providing voluntary “best management practices” that could reduce environmental stressors, such as reducing agriculture run off or freshwater inputs; and increasing awareness about MM health among the public, coastal communities and decision-makers.

6. Implementation

Monitoring and evaluation of activities conducted in field testing could be used to scale those activities that are the most feasible and/or effective in improving disease outcomes. In addition, depending on the Step 4 co-produced needs assessment, implementation of this action could include health assessments; strengthening capacity for disease detection; surveillance of stocks and populations; investigation and response to existing or emergent diseases; ensuring sustained capacity for long-term sample archiving (e.g., through the National Institute of Standards and Technology); mitigating disease risk factors when feasible and known; and identifying paths forward to advance technologies and methods such as conservation medicine.

7. Evaluation and adaptive management

This step could include synthesizing data on an annual basis to regarding disease outcomes, specifically as it relates to any activities field tested or implemented at scale. This data and its analysis could also be used to inform restoration and management of other actions taken under the Strategy or by other entities (e.g., the Louisiana TIG) as part of reducing the cumulative effects of disease and other stressors on MM populations.

8. Pathway to benefit



The pathway to benefit for this potential action is to likely reduce impacts, mortality, and morbidity of bottlenose dolphins from disease and environmental hazards, thereby improving their health and resilience.

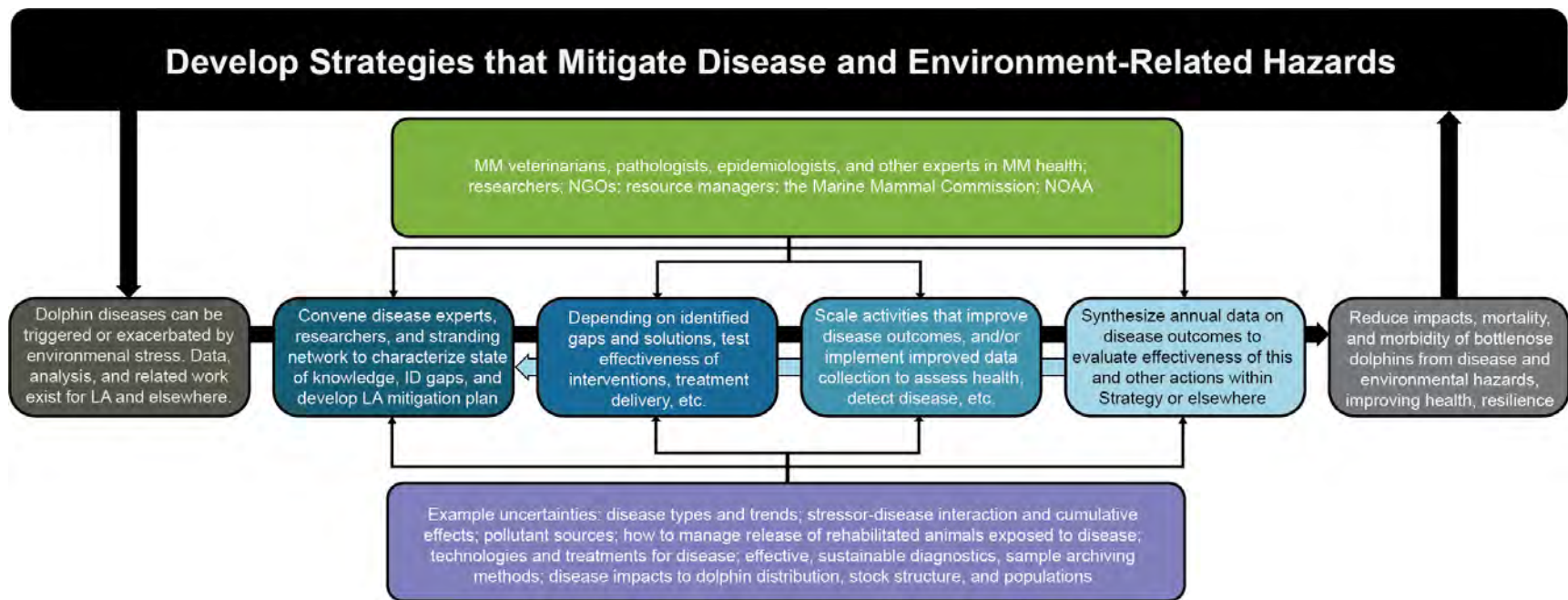


Figure A-8. Conceptual model for the potential MM restoration action to develop strategies that mitigate environment-related disease.

APPENDIX B. ENGAGEMENT OF PARTNER GROUP REPRESENTATIVES

The Institute and NOAA team met with representatives from categories of partners that would be necessary to engage for successful MM implementation (Table B-1). This effort comprised the execution and completion of Task 1.4 of this project.

Table B-1. Meetings with representatives of categories of partners necessary to advance the MM Strategy.

Meeting Date	Name of Organization	Location
August 28, 2025	Louisiana Sea Grant (LASG) https://www.laseagrant.org/	The Water Institute, 1110 River Rd., Baton Rouge, LA
August 29, 2025	Barataria-Terrebonne National Estuary Program (BTNEP) https://btnep.org/	NOAA 5304 Flanders Drive, Baton Rouge, LA
October 20, 2025	Louisiana Department of Wildlife and Fisheries (LDWF) https://www.wlf.louisiana.gov/	LDWF 2000 Quail Drive, Baton Rouge, LA
November 6, 2025	Louisiana State University, Department of Agriculture, School of Renewable and Natural Resources (LSU) https://www.lsu.edu/agriculture/rnr/index.php	LSU RNR Baton Rouge, LA
November 10, 2025	Audubon Nature Institute, Audubon Aquarium Rescue (meeting 1 of 2) https://audubonnatureinstitute.org/ https://audubonnatureinstitute.org/audubon-aquarium-rescue	Virtual
January 6, 2026	Audubon Nature Institute, Audubon Aquarium Rescue (meeting 2 of 2) https://audubonnatureinstitute.org/ https://audubonnatureinstitute.org/audubon-aquarium-rescue	The Water Institute 1110 River Rd., Baton Rouge, LA
January 28, 2027	National Marine Mammal Foundation (NMMF) https://nmmf.org/	Virtual



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