Deepwater Horizon
Open Ocean Trustee Implementation Group

MONITORING AND ADAPTIVE MANAGEMENT ACTIVITY IMPLEMENTATION PLAN:

STRATEGIC APPROACH FOR BIRD RESTORATION EVALUATION

June 2024

1.0 Introduction and Purpose

The *Deepwater Horizon* (DWH) oil spill settlement in 2016 provides the Natural Resource Damage Assessment (NRDA) Trustees (Trustees) up to $8.8 billion, distributed over 15 years, to restore natural resources and services injured by the spill. As described in the DWH oil spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS; DWH NRDA Trustees 2016), the Trustees selected a comprehensive, integrated ecosystem approach to restoration. The Final PDARP/PEIS considers programmatic alternatives, composed of Restoration Types, to restore natural resources, ecological services, and recreational use services injured or lost as a result of the DWH oil spill incident. As shown in the PDARP/PEIS, the injuries caused by the DWH oil spill affected such a wide array of linked resources over such an enormous area that the effects must be described as constituting an ecosystem-level injury. The PDARP/PEIS and information on the settlement with BP Exploration and Production Inc. (called the Consent Decree) are available at the Gulf Spill Restoration website.

Given the unprecedented temporal, spatial, and funding scales associated with the DWH oil spill restoration effort, the Trustees recognized the need for robust Monitoring and Adaptive Management (MAM) to support restoration planning and implementation. As such, one of the programmatic goals established in the PDARP/PEIS is to "Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation" to ensure that the portfolio of restoration projects provides long-term benefits to natural resources and services injured by the spill (Appendix 5.E of the PDARP/PEIS). This framework allows the Trustees to evaluate restoration effectiveness, address potential uncertainties related to restoration planning and implementation, and provide feedback to inform future restoration decisions.

The Trustees also established a governance structure that assigned a Trustee Implementation Group (TIG) to each of the eight designated Restoration Areas, including the Open Ocean Restoration Area. Each TIG makes restoration decisions for the funding allocated to its Restoration Area and is also responsible for identifying MAM priorities for its respective TIG. The Open Ocean TIG includes the four federal Trustee agencies: U.S. Department of Commerce, represented by the National Oceanic and Atmospheric Administration (NOAA); U.S. Department of the Interior (DOI); U.S. Department of Agriculture (USDA); and U.S. Environmental Protection Agency (EPA). It is responsible for restoring the natural resources and services within the Open Ocean Restoration Area that were injured by the DWH oil spill and associated spill response efforts.

The DWH Trustees opened a publicly available Administrative Record for the NRDA of the DWH oil spill, including restoration planning activities, concurrently with publication of the 2010 Notice of Intent (pursuant to 15 CFR § 990.45). DOI is the lead federal Trustee for maintaining the Administrative Record, which can be found at http://www.doi.gov/deepwaterhorizon/adminrecord. This administrative record is used by the Open Ocean TIG to provide the public with information about DWH restoration planning, including MAM activities. Additional information is also provided at http://www.gulfspillrestoration.noaa.gov. Information about restoration projects and MAM activities, including any data and/or analyses produced and annual reports, are made publicly available via the Data Integration Visualization Exploration and Reporting portal (DIVER), https://www.diver.orr.noaa.gov/web/guest/deepwater-horizon-nrda-data.

To articulate its approach to MAM, the Open Ocean TIG released its MAM strategy in April 2019 and revised it in June 2020 (OO TIG 2020). The strategy describes the TIG's responsibilities, goals, and priorities for the use of the Open Ocean Restoration Area MAM allocation. Three goals were identified for the use of Open Ocean MAM funds: the evaluation of outcomes of the Open Ocean restoration effort across the portfolio of Open Ocean projects, the identification and filling of data gaps that affect the Open Ocean TIG's ability to meet and/or evaluate progress toward restoration goals for Open Ocean resources, and the identification of benefits and outcomes from Open Ocean restoration activities to each resource at both the project level and the ecosystem level across the northern Gulf of Mexico. The strategy also identifies three priorities for Open Ocean MAM: evaluation of restoration progress, identification of stressors, and assessment of focal species and important habitats. In addition to MAM goals and priorities, the strategy also describes the TIG's process to develop and release MAM Activities. MAM activities are projects or other MAM efforts (e.g., monitoring, modeling, data collection, studies) developed to address identified MAM priorities.

This MAM Activity Implementation Plan (MAIP) describes the MAM activity, "Strategic Approach for Bird Restoration Evaluation" which addresses and will continue to develop MAM priorities identified by the Open Ocean TIG for the Bird Restoration Type. This MAM activity will inventory and evaluate the available bird data from DWH projects and MAM activities, along with other existing sources, to enable the TIG to measure the progress being made towards bird restoration relative to the injury. This MAM activity will provide for a consistent method to assess restoration progress for injured bird species.

2.0 MAM Activity Description

2.1 Background

To date, nearly $47M of the $70M in restoration funding has been approved by the Open Ocean TIG for the Bird Restoration Type. The Open Ocean TIG has invested in restoration projects for Common Loons, Black Terns, and seabirds at their nesting areas outside the Gulf of Mexico, to ensure that work for injured species occurs where it will have the greatest population level impact. State and Regionwide Restoration Areas have also implemented restoration for a number of other injured bird species through coastal and nearshore habitat projects along the northern Gulf coast. Examples include stewardship of breeding shorebirds and nearshore seabirds (e.g., Least Tern, Snowy Plover), as well as construction or restoration of islands that are essential breeding habitats for colonial waterbirds, such as Brown Pelicans, Royal and Sandwich Terns, and Black Skimmers. Furthermore, there are potentially unaccounted for benefits from habitat restoration projects that provide additional benefits to a variety of injured bird species, such as marsh birds, waterfowl, and northern nesting shorebirds. Many of these species benefit from improved habitat conditions at migratory stopovers or overwintering locations along the northern Gulf coast. Evaluating the targeted monitoring data associated with individual projects and the benefits of habitat restoration projects to determine potential benefit for birds at the Restoration Type level has not been accomplished.

Accounting for additional benefits to birds resulting from restoration activities will be part of this MAM activity, which is designed to enhance our holistic understanding of the benefits of Gulf restoration to the Bird Restoration Type. Additionally, early restoration projects initiated prior to settlement will contribute to restoring many Gulf coast nesting bird species. In this context of ongoing bird restoration across the Restoration Areas, it is important to re-evaluate our Open Ocean bird Objectives and

Indicators to inform future restoration planning. Being strategic with the remaining Bird Restoration Type funds is essential as there is limited funding to support discrete projects in nesting areas of each of the more than 50 species that nest outside the Gulf. However, a number of injured bird species that had low estimated injury numbers have already benefitted from Gulf coast restoration through improved habitat conditions that provide benefits during the non-breeding portions of the annual cycle. Inventorying the data available and developing a plan for analyses will allow the Trustees to further demonstrate restoration progress and ensure that the American people are fully compensated for the DWH oil spill injury.

This MAM activity will contribute to a more complete understanding of the benefits to injured bird species resulting from multiple restoration efforts and the data needed to evaluate bird restoration. An important component of this work will be an inventory of available data assets to support analyses to evaluate benefits of restoration work, progress towards bird restoration goals listed in the PDARP/PEIS, and the development of updated Open Ocean bird restoration indicators. This MAM activity will allow us to better understand restoration benefits, communicate to the public, and facilitate our Oil Pollution Act (OPA) Natural Resource Damage Assessment (NRDA) decision-making process for adaptively managing existing projects and selecting new projects.

This MAM activity was selected by the Open Ocean TIG because the work directly addresses its MAM Strategy goals of evaluating the outcomes of its restoration efforts across the portfolio of projects, identifying gaps that affect the TIG's ability to meet and/or evaluate progress toward restoration goals for Open Ocean resources, and identifying the benefits and outcomes from all the TIG's restoration activities at the resource level across the northern Gulf of Mexico (OO TIG 2020). Understanding the impact of existing restoration activities will help inform decisions regarding future restoration activities. The analysis will also inform the prioritization of MAM data collection and monitoring necessary to evaluate the impact of restoration actions.

The MAM activity also addresses the three MAM priorities identified in the MAM strategy: evaluation of restoration progress, identification of stressors, and assessment of focal resources and important habitats. For the MAM activity, existing data will be inventoried, including DWH and other data sets. Data gaps will be investigated to identify important missing information critical to understanding and evaluating the restoration benefits at the Restoration Type level, which can be used to develop an approach to obtain needed information.

2.2 Task Descriptions

Task 1: Inventory of Bird Data

The bird data inventory will include DWH restoration data collected to date, as well as other available datasets relevant to the 93 injured species. The result of this task will be a list of available datasets relevant to the restoration of the 93 injured species of birds in the Gulf, with a description of the data and parameters available within each dataset. In some cases, such as colonial nesting waterbirds, it may be possible to group species for easier assessment based on interspecific associations, life history, or habitats. The inventory will examine data such as annual productivity indices (e.g., number of fledglings from nesting areas), nest abundance, and other parameters. This inventory is critical to understanding the current state of bird restoration along the northern Gulf coast and is essential to the adaptive management cycle for bird restoration.

Task 2. Gap Analysis and Planning for Assessment of Restoration Progress
Based on the inventory from Task 1, develop a gap analysis and plan to assess restoration progress for injured bird species. The result of this task will be a report that includes a species-by-species assessment describing and highlighting any data or information gaps. For example, a good existing source of information on anticipated information gaps is the Gulf of Mexico Avian Monitoring Network (GoMAMN) Strategic Monitoring Guidelines and Gap Analysis for Seabirds and Shorebirds (Chapters 6 and 7 in [Wilson et al. 2019]). Critically, this task will evaluate the data that has been collected to date or will be collected that can be used to show an increase in target species numbers, or used to quantify additional benefits to non-target injured species (e.g., those accrued through marsh restoration). This task will also include ideas and strategies for synergizing existing data sources, as well as considerations for how different types of data may contribute to the evaluation of bird restoration (e.g., programmatic Gulf-wide data as background with project-level data considered in that context). With a focus on refining Open Ocean Bird Restoration Objectives and Indicators, a key output will be identification of metrics or indicators that could be tracked to evaluate restoration progress.

2.3 Methods

Task 1: Inventory of Bird Data
All datasets relevant to the restoration of the 93 injured species will be inventoried. In some cases, such as colonial nesting waterbirds, it may be possible to group species for easier assessment based on interspecific associations, life history, or habitats.

Implementation planning to conduct this MAM Activity will require extensive collaboration among existing efforts. In addition to the funded bird restoration projects in the OO TIG, numerous restoration projects that will benefit birds have been completed, are ongoing, or are planned for implementation in the State and Regionwide TIGs. These other TIGs have also implemented MAM activities and data collection efforts for birds that will support this MAM activity. All will be inventoried through this MAM activity.

Other planning efforts that focus on the needs for bird restoration and evaluation of restoration outcomes for birds, as well as other relevant bird datasets, will be considered in coordination with all Trustees as applicable. Building on the Strategic Framework for Bird Restoration Activities (DWH NRDA Trustees 2017), a preliminary list of these efforts, documents, and projects/activities that are candidates for consideration, among others to be identified collaboratively, are:

- GoMAMN;
- Regionwide MAM Activity to monitor colonial waterbirds across the northern Gulf coast and integration of data from all colonial waterbird aerial surveys (2010-2013, 2015, 2018 [LA], 2021) [DIVER ID#257];
- Shorebird and nearshore seabird stewardship activities through State and Regionwide TIGs;
- Development of guidance for avian habitat restoration and monitoring in Louisiana [DIVER ID#248];
- Louisiana MAM Activity to evaluate secretive marsh bird habitat relationships and distributions, to guide restoration planning as well as monitoring methods [DIVER ID#205]; and
- Alabama project to better inform restoration planning for colonial nesting wading birds by determining movements and habitat use of White Ibis and Tricolored Herons [DIVER ID#131].

Other relevant external sources of data will be inventoried as well. A preliminary list of these datasets that are candidates for consideration, among others to be identified collaboratively, are:

- eBird;
- USFWS Inventory & Monitoring program;
- NPS Inventory & Monitoring program;
- Florida Fish and Wildlife Conservation Commission Florida Shorebird Database;
- Audubon's Christmas Bird Count;
- Audubon Coastal Bird Survey;
- Manomet's International Shorebird Survey; and
- U.S. Geological Survey's Breeding Bird Survey.

This task is data-based only and does not involve field-based activities. No new data collection will be conducted as part of this activity.

Task 2. Gap Analysis and Planning for Assessment of Restoration Progress
During this task, data gaps will be identified for the 93 injured species. Where adequate data coverage exists to inform existing draft Open Ocean Bird Objectives and Indicators, a plan for assessing restoration progress will be developed that includes development of data analysis goals (hereafter, assessment plan). These goals will be developed with input from co-Trustees and other partners. Conversely, where data gaps exist, a prioritization of data collection needs for bird restoration and monitoring will be developed.

Implementation will include a series of meetings among technical advisors to develop the gap analysis and assessment plan. To the extent practicable, these planning meetings may use existing meetings and may include virtual meetings for efficiency and reduced travel expenses.

Technical advisors are likely to include staff from DOI, including FWS, NPS, and USGS. The remainder of technical advisors will be determined in coordination with the other Trustees from Open Ocean, Regionwide, and State Restoration Areas. These technical advisors may include representatives of such data rich sources such as State resource agencies and other partner organizations.

Additional feedback on the gap analysis and assessment plan will be sought from partner organizations through facilitated workshops and directed communications. A preliminary list of potential organizations to provide feedback includes:

- National and State Units of the Audubon Society
- Cornell Lab of Ornithology
- American Bird Conservancy
- Gulf Coast Bird Observatory
- Coastal Bend Bays and Estuaries Program
- Gulf Coast Joint Venture (and partners)
- Atlantic Coast Joint Venture (and partners)
- Texas Colonial Waterbird Society

These conversations will likely result in identifying additional desired outcomes outside the scope of this MAM activity that may lead to discussion with the Trustees about funding of future activities.

2.4 Outputs and Their Use

The result of both tasks will be an inventory of relevant data for evaluation, gap analysis and prioritization of data collection needs for bird restoration and monitoring based on existing draft Open Ocean Bird Objectives and Indicators. These results will be compiled into a report detailing the inventory, gap analysis and assessment plan, which will be submitted for review by the Open Ocean TIG for review and comment on the results and recommendations. This assessment plan and gap analysis will be used to refine the existing Open Ocean Bird Objectives and Indicators and further develop Open Ocean restoration priorities for the remaining Open Ocean Bird allocation, MAM priorities, and an approach for continued *assessment* and reporting of restoration progress for Open Ocean bird restoration.

This activity will benefit bird restoration planning, accounting for all life history stages and habitats that support breeding, foraging, migration, and overwintering, including areas outside of the Gulf of Mexico. The activity will specifically benefit Open Ocean TIG bird restoration planning by providing an assessment of data availability and data needs which will be used in directing restoration funds in an informed and responsible way to achieve the greatest benefit to injured birds.

2.5 Timeline

The project is anticipated to take 30 months total starting at the development of an active agreement and receipt of funding. Tasks are expected to be completed sequentially with some overlap. Task 2 will start after the initial inventory is complete. We anticipate this activity will begin in June 2024 and continue through the end of December 2026.

Task Number	Task Description	Approximate Duration (months)
1	Inventory of Bird Data	18
2	Gap Analysis and Planning for Assessment of Restoration Progress	18

	FY24		FY25				FY26			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task 1	■	■	■	■	■	■				
Task 2					■	■	■	■	■	■

2.6 Budget

The total budget requested for this MAM Activity is $992,491. This includes anticipated costs for technical input and coordination with other Trustees and collaborators, contracting of external collaborators and associated contracting costs, oversight and administrative costs, and a 10% MAM Activity contingency. The budget estimate accounts for the 30 months anticipated to complete all tasks.

Item	Cost Estimate
Task 1	$228,449
Task 2	$456,898
MAM Activity Management, Oversight, and Reporting	$217,536
Subtotal without Contingency	$902,883
Contingency	$89,608
Total	$992,491

3.0 Roles and Responsibilities

DOI will be the Implementing Trustee responsible for this MAM Activity and will serve as both technical and administrative lead. DOI will be responsible for coordinating with the OO TIG and providing overall direction and oversight for this MAM Activity, including administration of any contracts or cooperative agreements, completing compliance requirements, financial tracking, annual reporting, and DIVER data management. Project implementation will require coordination with various internal and external partners. DOI will coordinate State Trustees and external partners, including all associated contracting requirements, to leverage this existing expertise and ensure contracts provide deliverables that address the objectives of this MAM Activity.

4.0 Data Management and Reporting

The DWH Trustees, as stewards of public resources under the Oil Pollution Act (OPA), will inform the public on the MAM Activity's progress and performance. Therefore, DOI will report the status of the proposed MAM Activity via the Data Integration, Visualization, Exploration, and Reporting (DIVER) Restoration Portal annually, as outlined in Chapter 7 of the PDARP/PEIS (DWH NRDA Trustees 2016). All reports and their associated analyses and datasets and other documentation created or compiled as part of this MAM Activity will also be stored on the DIVER Restoration Portal.

Data storage and accessibility will be consistent with the guidelines in Section 3.1.3 of the MAM Manual (DWH NRDA Trustees 2021a). In the event of a public records request related to data and information that are not already publicly available, the Trustee to whom the request is addressed would provide notice to the other OO TIG members prior to releasing any data that are the subject of the request. Some of the data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act) and therefore would not be publicly distributed.

5.0 Consistency with the DWH Programmatic Restoration Plan

This MAM Activity is consistent with the comprehensive, integrated ecosystem restoration portfolio approach taken in the PDARP/PEIS (DWH NRDA Trustees 2016). This MAM Activity will specifically support Open Ocean TIG Bird Restoration Type and associated Bird Restoration goals described in the PDARP/PEIS (Section 5.5.12). This activity will assist with implementing resource-level monitoring in the Strategic Framework for Bird Restoration Activities (Section 5.2; DWH NRDA Trustees 2017) and further development and refinement of project-specific monitoring recommendations, including Objectives and Indicators for Birds in the Open Ocean TIG. This MAM Activity also has direct linkages to the PDARP/PEIS, Monitoring and Adaptive Management Framework (Section 5.E). The framework calls for Trustees to synthesize monitoring information and restoration outcomes to support restoration evaluation and inform adaptive management at regional scales. This MAM Activity will improve the Open Ocean TIG's ability to quantify and evaluate Bird Restoration. The MAM activity also addresses the Open Ocean MAM priorities of "Evaluate Restoration Progress" and "Assess Focal Resources and Important Habitats," and specific information needs identified in the Open Ocean MAM Strategy addressed by this activity include: "*assessing appropriate indicators of progress toward Open Ocean restoration goals and objectives*"; "*locations and environmental characteristics of important breeding, foraging, nursery, or migratory habitats and areas of high productivity and/or biodiversity, including their variability in space and time*"; and "*distribution, abundance, health, and status of focal species, including their variability in space and time*".

6.0 Compliance Considerations

6.1 NEPA Review and Conclusion

A TIG may undertake preliminary planning activities such as project planning, data collection, feasibility studies, and engineering and design studies before a complex project is proposed for implementation. These preliminary phase studies may include minimally intrusive field activities (e.g., geotechnical evaluations, archaeological studies) that would allow the TIG to gather sufficient information to develop a more detailed analysis in a restoration plan, or for use in the restoration planning process. The PDARP/PEIS anticipated impacts from these types of activities to have the potential to cause short-term, minor adverse impacts to physical, biological, and socioeconomic resources while field activities are occurring. Where these conditions apply and activities are consistent with those described in the PDARP/PEIS, NEPA evaluation is complete, and no additional evaluation of individual activities is necessary at this time.

NEPA Review of MAM Activity
The activities and tasks described here consist exclusively of desktop analysis of existing literature, existing data resources, report development, and engagement of subject matter experts. This activity would include data collation and synthesis with no field data collection. Consequently, there will be no impact to resources as defined within the PDARP/PEIS.

NEPA Conclusion
After review of the proposed activities against those actions previously evaluated in the PDARP/PEIS, the Open Ocean TIG determined that the environmental consequences resulting from this MAM activity fall

within the range of impacts described in Section 6.4.14 of the PDARP/PEIS, thus no additional NEPA evaluation is necessary at this time.

6.2 Compliance with Other Environmental Laws and Regulations

There will be no field work as part of this MAM activity. Nevertheless, a Biological Evaluation form has been completed for review, approval and documentation that no effects to protected species, their habitats, or to cultural resources are anticipated. No consultations, permits, or authorizations are needed to complete this MAM activity. See the table below for the current compliance status by statute.

Federal environmental compliance responsibilities and procedures follow the Trustee Council Standard Operating Procedures (SOP), which are laid out in Section 9.4.6 of that document (DWH NRDA Trustees 2021b). Following the SOP, the Implementing Trustees for each activity will ensure that the status of environmental compliance (e.g., completed vs. in progress) is tracked through the Restoration Portal.

Documentation of regulatory compliance will be available in the Administrative Record that can be found at the DOI's Online Administrative Record repository for the DWH NRDA (https://www.doi.gov/deepwaterhorizon/adminrecord). The current status of environmental compliance can be viewed at any time on the Trustee Council's website.

Status of federal regulatory compliance reviews and approvals for the proposed project.

Federal Statute	Compliance Status
Bald and Golden Eagle Protection Act (USFWS)	N/A
Coastal Barrier Resources Act (USFWS)	N/A
Coastal Zone Management Act	N/A
Endangered Species Act (NMFS)	N/A
Endangered Species Act (USFWS)	N/A
Essential Fish Habitat (NMFS)	N/A
Marine Mammal Protection Act (NMFS)	N/A
Marine Mammal Protection Act (USFWS)	N/A
Migratory Bird Treaty Act (USFWS)	N/A
National Historic Preservation Act	In Progress
Rivers and Harbors Act/Clean Water Act	N/A
National Environmental Policy Act	Complete, see analysis above.

7.0 References

DWH NRDA Trustees. 2016. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

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OO TIG (DWH Open Ocean Trustee Implementation Group). 2020. Open Ocean Trustee Implementation Group Monitoring and Adaptive Management Strategy. June. http://www.gulfspillrestoration.noaa.gov/.

Wilson, R. R., A. M. V. Fournier, J. S. Gleason, J. E. Lyons, and M. S. Woodrey (Editors). 2019. Strategic Bird Monitoring Guidelines for the Northern Gulf of Mexico. Mississippi Agricultural and Forestry Experiment Station Research Bulletin 1228, Mississippi State University, Mississippi State, MS. USA. 324 Pages.