

UPDATE FOR 2023

Deepwater Horizon Natural Resource and Damage Assessment Background

On April 20, 2010, an explosion of the Deepwater Horizon drill rig caused the largest offshore oil spill in U.S. history. The well spewed oil for 87 days and released millions of barrels of oil into the Gulf of Mexico. NOAA Fisheries and other State and Federal Natural Resource Damage Assessment Trustees responded quickly to the disaster, saving wildlife, documenting injury, and helping with the cleanup.

Under the Oil Pollution Act of 1990, the Trustees assessed injuries to natural resources and the lost use of those resources caused by the Deepwater Horizon oil spill. We found that the spill injured a wide range of wildlife, habitats, and ecological functions. It also negatively impacted recreational opportunities, like fishing, boating, and beach-going. The injuries to the Gulf were ecosystem-wide.

NOAA is actively involved in the ongoing restoration phase, which will last many years. Many of the Trustees' restoration projects support healthy wildlife and habitats, improved water quality, and recreational access to the Gulf. NOAA has projects that are being planned or are ongoing that work with members of the Gulf Shrimping community. Additionally, we have included a set of projects that will help restore mesophotic and deep benthic communities, because we want the council to be aware of the large amount of data being collected and resources being created for the management community.

Gulf Shrimping Project Overviews:

- [Better BRD Project](#) - To get better bycatch reduction devices in broad use within the federal shrimp trawl fleet
- [DWH Hotspots Mapping Initiative](#) - To evaluate the feasibility of fisheries hotspot communication networks to improve fishing in and around the Gulf of Mexico
- [Narrow-bar Spacing TED Project](#) - Identify tools for sea turtle restoration through work with shrimpers to identify new turtle-excluder device designs that are more effective at excluding small-bodied turtles than current TED designs
- [AIS Pilot Project](#) - Enhance the understanding of Gulf of Mexico state permitted shrimp fishing effort
- [Mississippi Skimmer Trawl Modifications Project](#) - Decrease the number of entanglements and associated mortality of dolphins in commercial shrimp trawls in Mississippi state waters while maintaining catch efficiency and fishing performance/usability
- [Region Wide Commercial Lazy Line Modifications](#) - Decrease the number of entanglements and associated mortality of dolphins in the lazy lines of commercial shrimp trawl vessels (both otter and skimmer) operating within state inshore and coastal waters

Mesophotic and Deep Benthic Communities Project Overviews:

- [Habitat Assessment and Evaluation Project](#) - characterize community structure and function in mesophotic and deep benthic habitats, filling data gaps regarding the life histories, diversity, and population structures of species that comprise these communities, determining baseline conditions, and conditions at both injured and reference sites.
- [Mapping, Ground-Truthing and Predictive Habitat Modeling Project](#) - mapping in both mesophotic and deep benthic habitats to document the distribution of these habitats across the northern Gulf of Mexico, refine predictive models, and provide data on depth ranges, densities, and distributions of specific benthic species.
- [Coral Propagation Technique Development Project](#) - field- and lab-work to test a variety of methods and substrates to enhance coral recruitment and growth, and to test a variety of coral propagation techniques, including fragmentation and transplantation.
- [Active Management and Protection Project](#) - restore and protect these communities by engaging the general public and natural resources users through education and outreach, reducing threats to these habitats through resource protection activities, and supporting decision-making processes.

Better BRD Project

Project Status - Ongoing

Purpose of Update - Information and Awareness

The Better BRD Project is an industry-led, volunteer-based effort that aims to find better methods to reduce fish bycatch while also maintaining catch. The project team is active in identifying, testing, and increasing the use of more efficient bycatch reduction devices. The team, consisting of specialists from Louisiana Sea Grant, Texas Sea Grant, and NOAA Restoration, has been working with Gulf shrimp industry members to identify and test new innovations in bycatch reduction devices (BRDs) technology for broader use. If these innovations are successful in reducing both bycatch and shrimp loss, they could be added to the list of certified BRD designs available for Gulf shrimpers.

In Summer & Fall 2022, the first phases of new BRD testing took place. Phase one involved dive testing to determine how the devices perform on a standard Gulf shrimp trawl. Phase two 'Proof of Concept' Testing occurred July-October 2022 and involved testing of devices on NOAA's RV Caretta to evaluate catch characterization (shrimp retention and bycatch reduction). NOAA testing showed that the new BRD candidates performed similarly to the fisheye, the existing industry-standard BRD.

Industry testing began in Florida in early 2023 and is currently on-going in other regions of the Gulf. This testing allows interested shrimpers to volunteer to test the new BRDs candidates in

their region under area conditions, such as bottom type & bycatch profile. The participants report back to the project team on the performance of the new BRDs, including bycatch reduction, shrimp retention, and ease of use. The participants are compensated for their efforts.

The next step will be industry comparative testing where the new BRD candidates will be tested alongside the industry standard fisheye under regional conditions. BRD candidates that reduce bycatch by at least 10% while maintaining shrimp retention will move forward for certification for industry-wide use.

DWH Hotspots Mapping Initiative

Project Status - Ongoing

Purpose of Update - Information and Awareness

The National Fish and Wildlife Foundation (NFWF), in cooperation with the National Oceanic and Atmospheric Administration, is evaluating the feasibility of fisheries hotspot communication networks to improve fishing in and around the Gulf of Mexico. Over the next year or two of this voluntary project, the project team will work with fishing fleets and groups to determine where hotspot mapping networks could be beneficial and how they might be implemented.

The goal of the project is to examine the feasibility of hotspot mapping networks to support the sharing of fishing information, develop communication and mapping tools to avoid unwanted fishing interactions, and improve fishing experiences. The project team has used a variety of outreach approaches, including a brief online interest form and follow-up interviews, to identify and engage with stakeholders from fisheries, fleets, and fishing organizations that may benefit from a hotspot management system and would be willing to discuss coordination, logistics, and data needs.

This project is completely voluntary and will not be implemented through regulations. This voluntary information will be combined with other environmental and species distribution data to create real-time, regularly updated maps that will support the avoidance of areas with unwanted species interactions.

NFWF worked to ensure that as many fleets and communities as possible are engaged by this project by bringing on LGL as Fisheries Liaison in summer 2023. In addition, NFWF is in the final stages of hiring a data analyst to support this project. With this team in place, the Hotspots Mapping Initiative should be able to meet its ultimate goal of developing implementation plans for one or more interested fleets or groups by the end of FY 2024.

Narrow-bar Spacing TED project

Project Status - Ongoing

Purpose of Update - Information and Awareness

The goal of the Narrow-bar Spacing Turtle Excluder Device project, funded through the DWH Open Ocean Trustee Implementation Group, is to identify tools for sea turtle restoration through work with shrimpers to identify new turtle excluder designs that are more effective at excluding small-bodied turtles than current turtle excluder designs, while ensuring minimal impact on shrimp harvest. In the first round of testing, the project team tested a total of seven turtle excluder prototypes with 2.5-inch (narrow-bar) spacing, along with trials of the industry standard turtle excluder device with 4-inch bar spacing.

The second round of prototype testing took place in the summer of 2023, followed shortly after by proof of concept testing aboard the NOAA *R/V Caretta*. Due to poor weather conditions, small turtle testing was only performed on the control, industry standard, and one additional bottom opening rectangular turtle excluder device installed at 45 degrees, which did not pass. Proof of concept testing occurred at the end of August and used prototypes from 2022 that passed small turtle testing but had not yet been through proof of concept. These prototypes performed very well with double the amount of shrimp caught as usual and not many fish.

Commercial testing contracts are either underway or will go back out for bid in early fiscal year 2024 (Fall 2023) for fishery dependent testing. Results of 2023 efforts will be provided to the stakeholder working group by email, and the next formal meeting will be held before the end of calendar year 2023. Industry outreach on results will follow commercial testing completion.

Region Wide AIS Pilot Project

Project Status - Initiating

Purpose of Update - Information and Awareness

The goal of the AIS (Automatic Identification System) Pilot project, funded by the DWH Regionwide Trustee Implementation Group, is to enhance the understanding of Gulf of Mexico state-permitted shrimp fishing effort. These data will assist restoration managers in understanding the overlap of fishing effort, sea turtle distribution, and sea turtle mortality, eventually leading to more informed sea turtle restoration.

This project is currently in the early stages of development and has experienced an initial setback after receiving negative feedback from state resource agencies regarding the AIS technology. The project team anticipates having a conversation during the upcoming Shrimp AP meeting to discuss the options and interest in the shrimp fishery of using a location recording device. We are aiming to gauge the industry's interest and appetite for different ideas to work towards a collaborative path to understand inshore shrimping effort to inform sea turtle restoration efforts in the Gulf of Mexico. We are no longer partnering with the GSMFC at this

time. If a suitable path forward is devised, we will be seeking new partners for outreach and execution of the project.

Mississippi Skimmer Trawl Modifications project

Project Status - Not started

Purpose of Update - Information and Awareness

The goal of the Skimmer Trawl Modifications project, funded through the DWH Mississippi Trustee Implementation Group, is to decrease the number of entanglements and associated mortality of dolphins in commercial shrimp trawls in Mississippi state waters while maintaining catch efficiency and fishing performance/usability. This project is scheduled to begin implementation efforts during the summer of 2024. The project is intended to span 5 years and is estimated at approximately \$3M.

This project will be conducted collaboratively with researchers and the fishing community to evaluate the performance and usability of both trawl covers and trawls constructed of alternative materials. Commercial fishermen have been proactive in their efforts to modify gear to prevent interactions with dolphins, and NOAA will work with fishermen to test modifications and optimal trawl materials/configurations that reduce these interactions while maintaining fishing performance.

Region Wide Commercial Lazy Line Modifications

Project Status - Not started

Purpose of Update - Information and Awareness

The goal of the Commercial Lazy Line Modifications project, funded through the DWH Regionwide Trustee Implementation Group, is to decrease the number of entanglements and associated mortality of dolphins in the lazy lines of commercial shrimp trawl vessels (both otter and skimmer) operating within state inshore and coastal waters. This project is not scheduled to begin implementation efforts until 2024, but will span 7 years and is estimated at approximately \$3.2M.

The project will involve 2 initial phases, with the first phase including 4-5 years of planning, collaborative in-water gear testing with researchers and industry members, and developing a plan for enacting voluntary gear modification throughout the Gulf of Mexico shrimp fleet. The second phase would follow, spanning 2-3 years, and include working collaboratively with stakeholders and interested members of the shrimp trawl fleet to determine a voluntary or incentive use program to adopt broader use of alternative lazy line material.

Mesophotic and Deep Benthic Communities:

Habitat Assessment and Evaluation Project

Project Status: Ongoing

Purpose of Update: Information and Awareness

The life histories, diversity, and population structures of Mesophotic and Deep Benthic Communities species in the Gulf of Mexico are not well understood. The “Habitat Assessment and Evaluation project” is filling those knowledge gaps, determining baseline conditions, and documenting conditions at both injured and reference sites. This project involves field surveys and laboratory-based activities to analyze habitats and determine biological characteristics of corals.

The Habitat Assessment and Evaluation project hosted two workshops with subject-matter experts - one focused on fish and mobile invertebrates, the other focused on sessile invertebrates and infauna - to identify best practices and data gaps. A report detailing the outcomes of these workshops can be found [here](#).

The project team also conducted an inventory of data related to mesophotic and deep benthic communities species taxonomy and genetic diversity, distribution, abundance, behavior, trophic relationships, and health, as well as their biological and ecological traits. The project team published an [inventory report](#). This inventory informs project implementation, including the selection of field sites and activities to fill information gaps, prioritization of data analysis, establishment of monitoring, sampling, data collection, and data management standards.

In 2022 and 2023, the team did extensive fieldwork. They conducted 107 dives using a remotely operated vehicle (ROV) to survey habitats, map areas, and collect samples. They’re now reviewing the data from these dives, which includes video footage and still images. This helps them identify and count underwater organisms and classify habitats.

Mapping, Ground-Truthing, and Predictive Habitat Modeling Project

Project Status: Ongoing

Purpose of Update: Information and Awareness

The “Mapping, Ground-Truthing, and Predictive Habitat Modeling” project is working to understand and map the mesophotic and deep benthic communities in the Gulf of Mexico. This is important for making decisions about how to restore, manage, and protect these areas.

The project team is using mapping techniques to study these underwater habitats. They’re also using this information to create models that can predict where certain species and communities might be found. This helps improve the effectiveness and cost efficiency of current and future efforts to restore, manage, protect, and map these areas.

The team hosted a workshop with experts to discuss best practices for mapping and modeling these habitats. They also conducted a thorough review of all relevant mapping data for the northern Gulf of Mexico from 1980-2021. This resulted in the most comprehensive [inventory of existing digital data](#) sets within the project area. A report detailing the outcomes of that workshop can be found [here](#). Using the inventory, the team then conducted a [spatial prioritization](#) exercise with stakeholder input, including members and staff from the Council.

In 2022 and 2023, the team collected more data in the field. In 2022, they mapped 1,650 square nautical miles of the seafloor. Mapping operations are ongoing in 2023, specifically targeting areas identified by the gap analysis. The team is also currently processing 2022 data to develop detailed maps and models. These products inform the ongoing work of other project teams, as well as current and future restoration, protection, and management efforts.

Coral Propagation Technique Development Project

Project Status: Ongoing

Purpose of Update: Information and Awareness

The “Coral Propagation Technique Development” project is trying to restore mesophotic and deepsea coral communities damaged by the Deepwater Horizon oil spill. The project is developing methods to grow new corals and restore these communities on a large scale. This involves both field and lab work to test different methods and materials for enhancing coral growth, and different techniques for growing and transplanting corals.

The project team has spent two years planning, reviewing coral species affected by the oil spill, studying coral genetics, and examining artificial materials used for growing and restoring corals. They’ve gathered experts to discuss these topics and make recommendations.

In the past three years, the team has done a lot of field and lab work. They’ve collected live coral samples from the Gulf of Mexico during several research cruises. These samples were brought to labs for further study and care. The team is also conducting ongoing field activities in 2023, including collecting more coral samples and testing coral growth methods in the ocean.

In the lab, the team is conducting experiments to study feeding, nutrition, water quality, and the biology and reproduction of target coral species. They’re also preparing aquarium systems to house deep-water coral samples collected this year, and testing different methods for growing corals. The team has partnered with several aquariums and a university to help with coral care and experiments.

Active Management and Protection Project

Project Status: Ongoing

Purpose of Update: Information and Awareness, Request for Input

The Active Management and Protection project, funded by the DWH Open Ocean Trustee Implementation Group, aims to restore and protect mesophotic and deep benthic communities through three project elements.

- 1) Education and outreach activities to engage the general public and increase awareness of mesophotic and deepsea reef communities restoration efforts in the Gulf of Mexico. We will develop partnerships with public venues, with the Smithsonian National Museum of Natural History and other aquariums and science museums in the Gulf of Mexico. The project team will develop exhibits and other educational programs and materials highlighting Gulf of Mexico mesophotic and deepsea communities and restoration activities.
- 2) Reducing threats to mesophotic and deepsea coral communities through activities such as mooring buoy installations, removal of invasive species, documentation and removal of marine debris and derelict fishing gear, and assessing and remediating risks associated with leaking and abandoned oil and gas infrastructure. The team will catalog these threats in a database. This database will direct field activities. A cruise is currently being planned for April 2024 to perform threat reduction activities such as mooring installations and marine debris removal.
- 3) Support natural resource managers and the decision-making for the protection and management of mesophotic and deepsea coral communities. The team will provide information to natural resource managers, and collect feedback that may guide the planning and implementation of restoration activities. This “Science to Management” formally began in 2023 by talking with natural resource management groups. Project managers also organized the first-annual mesophotic and deep benthic communities [Restoration Webinar](#) in April 2023 to provide updates and plans for restoration activities. Similar webinars will be hosted annually throughout the rest of the project.