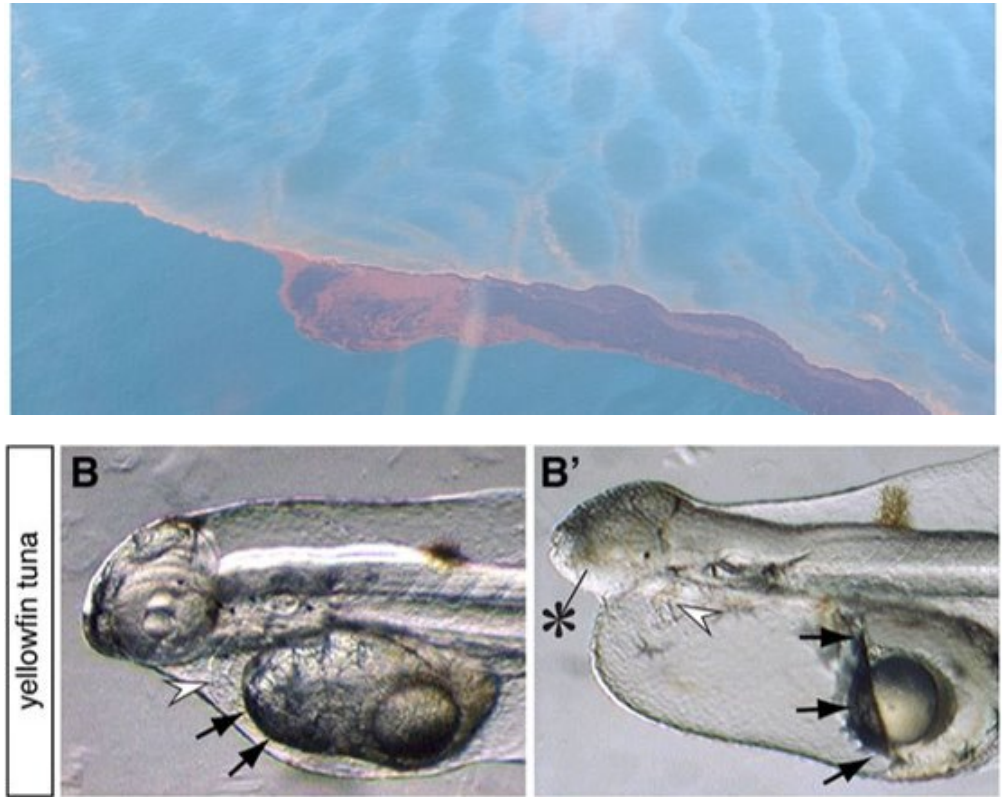
Fish and Water Column Invertebrate Restoration
Natural Resource Damage Assessment

Presentation Overview

- Injury description
- Fish and Water Column Invertebrate restoration goals
- Other types of restoration
- Ongoing Fish restoration projects
- Fish and Water Column Invertebrates Strategic Plan
  - What we did
  - Our priorities and objectives
- Next Steps

Fish and Water Column Injury

- Hundreds of species were exposed to oil
- Trillions of larval fish and invertebrates
- Fish suffered many negative effects from the oil
- Reef fish communities were also impacted



Restoration Goals

- The goals for Fish and Water Column Invertebrates are to restore for injuries from the spill by:
  - Reducing direct sources of mortality, and
  - Increase the health of fisheries by providing fishing communities with methodologies and incentives to reduce impacts to fishery resources

Rodrigo Friscione

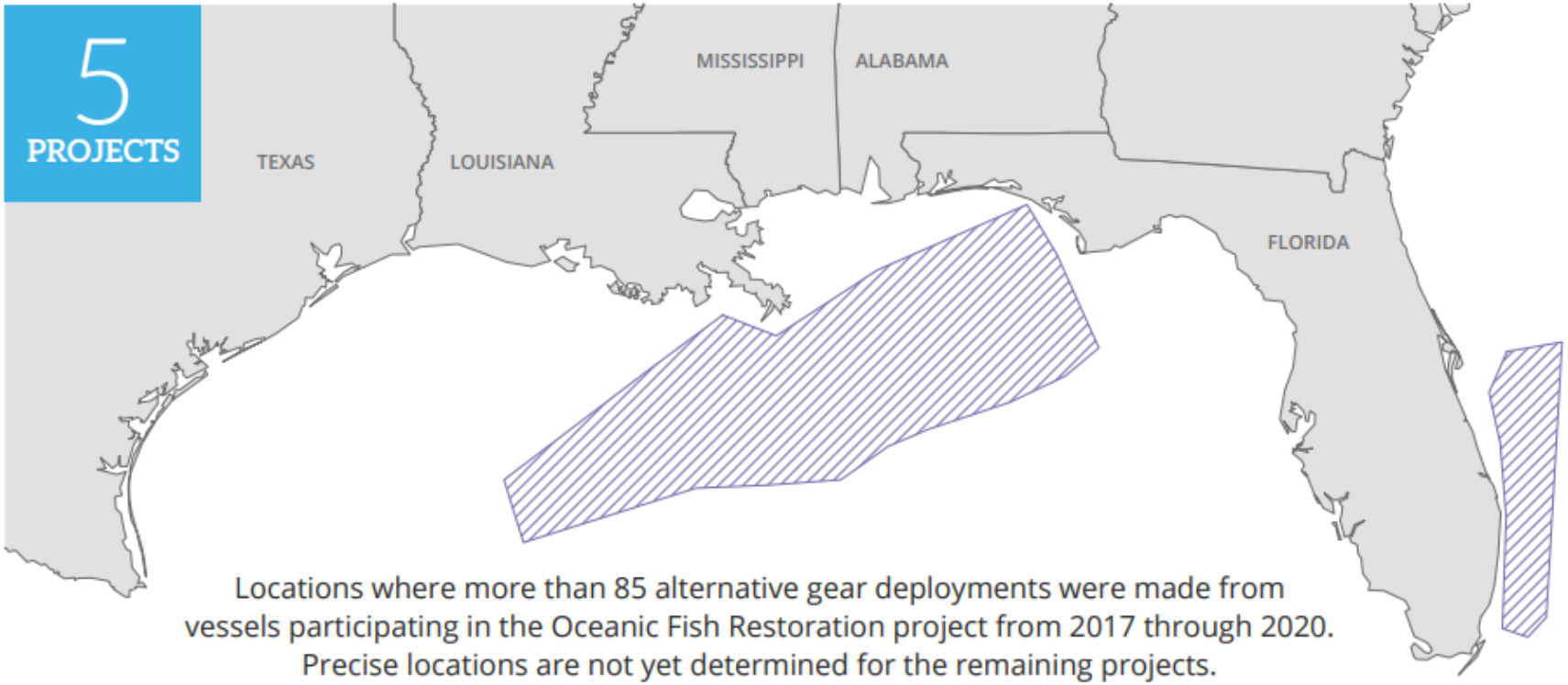
Other Restoration Types to Address Water Column Injury

- Wetlands, Coastal, and Nearshore Habitats
- Mesophotic and Deep Benthic Communities
- Water Quality – Nutrient Reduction and Water Quality
- Monitoring and others (SAVs, Oysters, Fed Lands)

Fish and Water Column Invertebrates

Introduction

From coastlines to the deep sea, a wide variety of organisms inhabit the Gulf of Mexico water column. These organisms include commercially and recreationally important fish and invertebrate species such as shrimp, bluefin tuna, and red snapper. These natural resources are critical to the health of the marine ecosystem and support the livelihood of seafood businesses and fishing communities across the Gulf. Furthermore, these organisms are an important part of the marine food web that includes other injured resources, such as birds, sea turtles, and marine mammals.



Locations where more than 85 alternative gear deployments were made from vessels participating in the Oceanic Fish Restoration project from 2017 through 2020. Precise locations are not yet determined for the remaining projects.

Settlement Allocation	Funds Committed Through 2020	Percent Funds Remaining
$400,000,000	$78,681,216	80%

Open Ocean Fish Restoration Projects

- Oceanic Fish Restoration Project
- Restoring for Bluefin Tuna via Fishing Depth Optimization
- Better Bycatch Reduction Devices
- Return 'Em Right - Reduction of Post-release Mortality from Barotrauma
- Hotspots Mapping Initiative

Species Being Restored

1. Yellowfin, bluefin, swordfish in domestic HMS longline
2. Red snapper, grouper, and other reef fish by recreational angler
3. Red snapper, Sciaenidae, and others working with shrimpers

Return ‘Em Right

Return ‘Em Right aims to increase survival of reef fish that are caught and released in the Gulf of Mexico. The program provides anglers with the knowledge and tools to successfully release reef fish.

Goals

- Reduce release mortality in reef fish
- Improve angler experiences with release gear
- Improve the overall health of reef fisheries

ReturnEmRight.org

Return ‘Em Right – Validation Studies & Monitoring

Research

- Attitudes and opinions of release practices
  - Baseline complete
  - Follow-up in 2024
- Release mortality studies
  - Auburn – red snapper
  - Mississippi State – Gulf-wide depredation
  - Louisiana Dep Wildlife and Fisheries – red snapper, greater amberjack, grey triggerfish
  - Univ Florida – gag grouper

Monitoring

- At-sea observer programs
  - AL, MS, FL – Descender use, mark-recapture, barotrauma rates
- State reef fish validations surveys
  - AL, MS, FL – Descender/vent tool on board, total # released alive using descenders by species, average depth
- Headboat Survey

The Hotspots Mapping Initiative

Project overview: Five-year VOLUNTARY project, being managed by the National Fish and Wildlife Foundation (NFWF) to evaluate the feasibility of fisheries hotspot communication networks to improve fishing efficiency in and around the Gulf of Mexico.

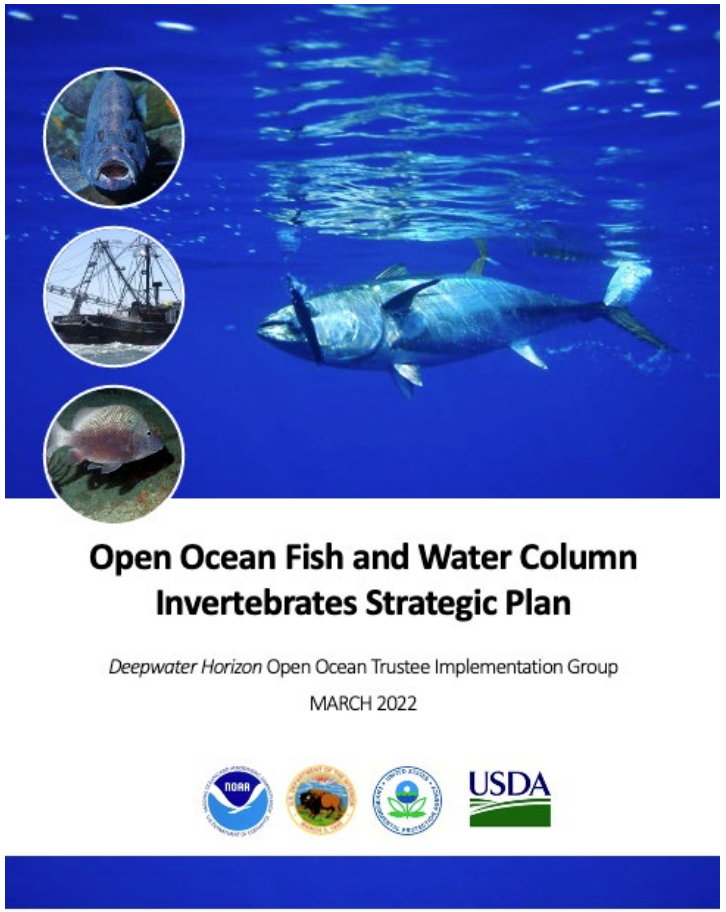
Mapping bycatch/catch areas will:

- Improve commercial and recreational fishing experiences through less sorting time and fewer dead discards
- Create potential marketing or certification opportunities
- Reduce unwanted catch to allow more fish to grow and reproduce, restoring natural resources that were affected by the *Deepwater Horizon* oil spill

Interested?

NFWF has requested - Please fill out a brief online form, which will be available later this month at https://bit.ly/3KvtdPq

Fish and Water Column Invertebrates Strategic Plan

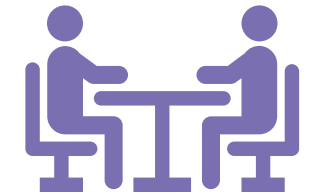


Overview and Purpose

- Guide restoration planning for FWCI
  - Establishing a species prioritization process
  - Identifying threats to injured species and associated restoration opportunities
  - Setting objectives for those species and/or species groups
  - Data gaps

Engagement

- Four sessions with external stakeholder groups in winter/spring 2021
  - Two invited roundtables
  - Two public meetings coordinated with the Gulf Commission and Gulf Council
  - Numerous internal meetings
- Received input on
  - Threats
  - Prioritization criteria – important species
  - Communications
  - Opportunities for collaboration



Priority Species Selections by Group

FWCI Species Group	Priority Species
Billfish*	Blue marlin (Makaira nigricans)
Drums and seatrout*	Spotted seatrout (Cynoscion nebulosus)
Flatfishes	Southern flounder (Paralichthys lethostigma)
Jacks*	Greater amberjack (Seriola dumerili)
Forage fish*	Mullets (Mugil cephalus and curema) Gulf menhaden (Brevoortia patronus)
Sea basses/Groupers*	Red grouper (Epinephelus morio)
Snappers*	Red snapper (Lutjanus campechanus) Vermilion snapper (Rhomboplites aurorubens)
Tunas/mackerels*	Yellowfin tuna (Thunnus albacares) King mackerel (Scomberomorus cavalla)
Other demersal	American eel (Anguilla rostrata)
Other reef-associated	Golden tilefish (Lopholatilus chamaeleonticeps)
Crabs and Lobsters	Blue crab (Callinectes sapidus)
Shrimp	Royal red shrimp (Pleoticus robustus)

* Indicates high priority groups

Threats

	Blue marlin	Greater amberjack
Fishing		
Overfishing	X	X
Illegal fishing		
Bycatch	X	X
Data limitations	X	X
Marine debris		
Plastic/Microplastic	X	X
Derelict gear		
Ecological		
Invasive species		
Climate change	X	X
Water quality		
HABs (red tide)		

Priority Restoration Objectives

- Reduce negative effects or risks of:
  - **bycatch**
  - **illegal, unregulated, and unreported fishing**
  - **marine debris to FWCI resources**
  - **post-release mortality**
  - **invasive species**

- **Develop tools and techniques to reduce uncertainty in restoration and provide best practices to stakeholders and fishing communities**

Next Steps

- Data gap study for Highly Migratory Species in Caribbean fisheries
- Share the FWCI Strategy and continue to hear feedback
- Future Open Ocean Restoration Plans likely in 2023 - following ongoing planning
- Contact: James.Reinhardt@noaa.gov
- https://www.gulfspillrestoration.noaa.gov/2022/04/open-ocean-trustees-release-restoration-strategy-fish-water-column-invertebrates

Open Ocean Restoration Area