



OPEN OCEAN RESTORATION AREA Fish and Water Column Invertebrates Strategic Plan Factsheet

March 2022



OVERVIEW AND PURPOSE

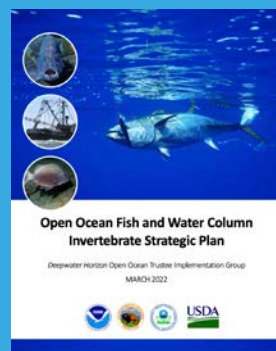
The *Deepwater Horizon* Open Ocean Trustee Implementation Group developed this strategic plan to inform future Fish and Water Column Invertebrates (FWCI) restoration. The purpose of this strategic plan is to guide restoration planning for FWCI by establishing a process to prioritize species for restoration, identify threats to, and restoration opportunities for injured species, and set restoration objectives. This plan builds on the injury assessment and restoration goals identified in the [Deepwater Horizon 2016 Programmatic Restoration Plan](#).

STAKEHOLDER INPUT

The Trustees held multiple engagement sessions, including virtual meetings with external and internal stakeholders. Stakeholders provided important information that helped guide the development of restoration priorities and objectives detailed in the strategic plan.

SCOPE OF THIS STRATEGIC PLAN

To consider the full scope of injury to fish and water column invertebrates (FWCI), experts prioritized species for restoration planning, identified restoration opportunities and objectives for them. This planning effort is specific to the Open Ocean FWCI Restoration Type, which also includes Sargassum, an algae important to the Gulf ecosystem.





WHY WE PRIORITIZED

Many fish and invertebrate species were injured by the oil spill. It is infeasible to plan for every species injured, so we prioritized injured species for restoration planning and project development.

SPECIES

FWCI Species groups and associated priority species selected for restoration planning.

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

* Indicates high priority groups. All others are lower priority groups. These groups do not necessarily correspond to fisheries management groups as described in fishery management plans. For example, the billfish group includes blue and white marlin, sailfish, and swordfish; however, under the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan and its amendments, swordfish are managed separately from billfish (i.e., five species of marlin, sailfish, and spearfish).

HOW WE PRIORITIZED

Based on input from stakeholders, the Open Ocean Trustees grouped resources by ecosystem and/or taxonomy and selected priority species for restoration efforts. Priority species were selected for 12 species groups. Groups were then categorized as high and low priority to guide FWCI restoration planning.

THREATS

The Open Ocean Trustees identified broad threats to FWCI resources and correlated specific threats to priority species as a basis for identifying restoration opportunities. The following threats were identified:

- Fishing impacts
- Marine debris, including derelict fishing gear
- Invasive species
- Climate change
- Water quality, including harmful algal blooms
- Other direct threats related to human uses, including energy production and marine pollution





OBJECTIVES

Priority species and threats information was used to set restoration objectives to guide near- (less than 5 years) and medium-term (5 - 10 years) restoration planning. Restoration objectives are presented in ranked priority and divided into high- and low-priority objectives. Objectives that are ranked higher will be the focus of our near-term effort. Lower ranking objectives will be considered on a more opportunistic basis. These need additional information to help develop potential actions, or they will be reconsidered when new information becomes available.

Priority Level: High

- Reduce bycatch of FWCI resources
- Reduce illegal, unregulated, and unreported (IUU) fishing of FWCI resources
- Develop and implement tools and techniques to reduce uncertainty in restoration, and provide best practices to stakeholders and fishing communities
- Reduce the threat of marine debris to FWCI resources
- Reduce post-release mortality of FWCI resources
- Reduce risks from invasive species to FWCI resources

Priority Level: Low

- Reduce risks to FWCI from energy production activities
- Reduce mortality of FWCI resources due to harmful algal blooms
- Enhance *Sargassum* and other pelagic communities

STRATEGIC CONSIDERATIONS

The Open Ocean Trustees identified strategic considerations based on stakeholder input for restoration planning and implementation. They include:

- Coordinating with ongoing efforts for other Restoration Types to maximize benefits to FWCI resources and seek synergies.
- Coordinating with research, management, and research programs and non-profit organizations to support technique development and implementation.
- Further developing and implement stakeholder outreach to support planning and implementation efforts, and identifying opportunities for participatory restoration planning.
- Focusing on large-scale, regional restoration projects where possible—restoring on a scale not covered by other programs, and to maximize stakeholder involvement.



RESTORATION

Potential actions are presented below to illustrate projects that could contribute to high priority restoration objectives. Their inclusion does not imply that they have been chosen to be implemented or are proposed projects or actions.

Restoration Objective	Priority species	Potential Action (s)
Reduce bycatch of FWCI resources	Spotted seatrout, southern flounder, king mackerel	Improve efficiency of current bycatch reduction technologies.
	Red grouper, greater amberjack	Reduce bycatch in Gulf of Mexico commercial fisheries.
	Red snapper	Reduce regulatory discards from commercial vessels.
	Red snapper	Develop and/or improve bycatch reduction technology.
	Vermilion snapper	Reduce non-regulatory discards from commercial vessels.
	Many	Increase utilization of bycatch reduction technologies in domestic and international fisheries.
	Many	Reduce incidental or non-target catch in commercial fisheries.
Reduce IUU fishing of FWCI resources	Vermilion snapper, red snapper	Reduce illegal fishing in U.S. waters by providing tools or resources to resource managers; Educate stakeholders to increase awareness and compliance with existing laws.
Create techniques to reduce uncertainty in restoration; provide best practices for reduction of fisheries impacts	Blue marlin	Implement projects to reduce unintentional fishing impacts occurring in international waters to highly migratory species.
	Yellowfin tuna	Develop techniques to reduce juvenile mortality of yellowfin tuna in international fisheries targeting other tunas.
	All	Provide fishermen and stakeholders tools, techniques, and information.
Decrease the threat of marine debris to FWCI resources	Most	Develop new or encourage the use of existing methods to reduce or remove marine debris accumulation and entry into the Gulf of Mexico.
	Most	Remove plastic and/or microplastic from the marine environment.
	Blue crab, spotted seatrout, Southern flounder	Locate and remove ghost fishing gear (traps, nets, lines) from the Gulf of Mexico.
	Most	Educate the public regarding threats from marine debris.
Reduce post-release mortality of FWCI resources	Blue marlin, spotted seatrout	Increase angler awareness of best practices for catch and release practices to reduce fishing mortality.
	Southern flounder	Reduce release mortality in recreational fishery.
	Red snapper	Increase successful use of barotrauma mitigation techniques.
	All	Support work on Gulf-wide discard mortality reduction projects via innovations in best practices in the recreational fishery.
Reduce risks from invasive species to FWCI resources	Red snapper, vermilion snapper	Implement lionfish removal activities.
	All	Educate and train marine stakeholders on invasive species risks and prevention measures.

Projects would be evaluated under the Oil Pollution Act to determine restoration benefits and to meet Natural Resource Damage Assessment requirements.