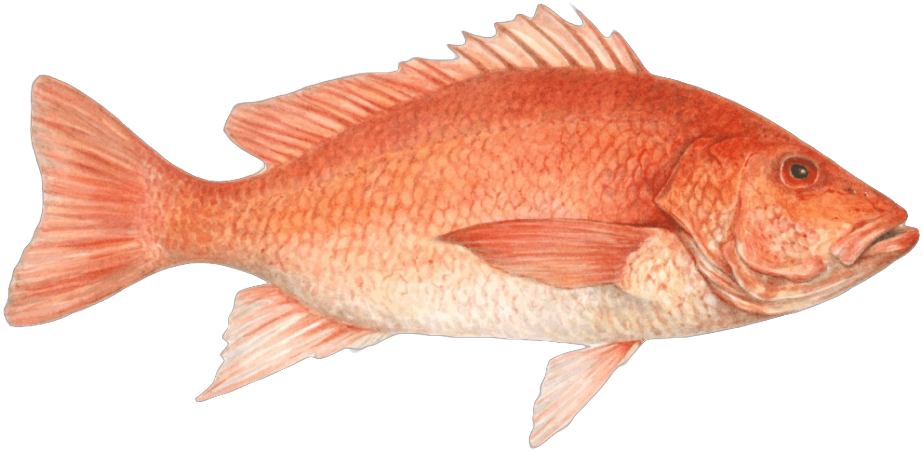
Monterey Bay Aquarium Seafood Watch

Environmental sustainability assessment of wild-caught reef fish from the United States caught using vertical lines, set longlines, and diving



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Species:	Jacks (*Seriola* spp.), Groupers (*Mycteroperca* spp., *Epinephelus* spp., *Hyporthodus* spp.) including wreckfish (*Polyprion americanus*), Snappers (*Lutjanus* spp., *Rhomboplites* spp., *Ocyurus* spp., *Etelis* spp.), Tilefishes (*Lopholatilus chamaeleonticeps, Caulolatilus microps*), Triggerfishes (*Balistes* spp.), Hogfish (*Lachnolaimus maximus*), Porgies (*Pagrus* spp., *Calamus* spp.)
Location:	United States
Gear:	Vertical lines, Set longlines, Diving
Type:	Wild Caught
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Assessed using Seafood Watch Fisheries Standard v4

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About the Monterey Bay Aquarium Seafood Watch program

The mission of the Monterey Bay Aquarium is to inspire conservation of the ocean and enable a future where the ocean flourishes and people thrive in a just and equitable world. To do this, the Aquarium is focused on creating extraordinary experiences that inspire awe and wonder, championing science-based solutions, and connecting people across the planet to protect and restore the ocean. We know that healthy ocean ecosystems are critical to enabling life on Earth to exist, and that our very survival depends on them. As such, our conservation objectives are to mobilize climate action, improve the sustainability of global fisheries and aquaculture, reduce sources of plastic pollution, and restore and protect ocean wildlife and ecosystems.

The aquarium is focused on improving the sustainability of fisheries and aquaculture given the role seafood plays in providing essential nutrition for 3 billion people globally, and in supporting hundreds of millions of livelihoods. Approximately 180 million metric tons of wild and farmed seafood is harvested each year (excluding seaweeds). Unfortunately, not all current harvest practices are sustainable and poorly managed fisheries and aquaculture pose the greatest immediate threat to the health of the ocean and the economic survival and food security of billions of people.

The Seafood Watch program was started 25 years ago as a small exhibit in the Monterey Bay Aquarium highlighting better fishing practices and grew into one of the leading sources of information on seafood sustainability, harnessing the power of consumer choice to mobilize change. The program's comprehensive open-source information and public outreach raises awareness about global sustainability issues, identifies areas for improvement, recognizes and rewards best practices and empowers individuals and businesses to make informed decisions when purchasing seafood.

We define sustainable seafood as seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems, minimize harmful environmental impacts, assure good and fair working conditions, and support livelihoods and economic benefits throughout the entire supply chain. As one aspect of this vision, Seafood Watch has developed trusted, rigorous standards for assessing the environmental impacts of fishing and aquaculture practices worldwide. Built on a solid foundation of science and collaboration, our standards reflect our guiding principles for defining environmental sustainability in seafood.

Seafood Watch Ratings

The Seafood Watch Standard for Fisheries is used to produce assessments for wild-capture fisheries resulting in a Seafood Watch rating of green, yellow, or red. Seafood Watch uses the assessment criteria to determine a final numerical score as well as numerical subscores and colors for each criterion. These scores are translated to a final Seafood Watch color rating according to the methodology described in the table below. The table also describes how Seafood Watch defines each of these categories. The narrative descriptions of each Seafood Watch rating, and the guiding principles listed below, compose the framework on which the criteria are based.

Green	Final Score >3.2, and either criterion 1 or criterion 3 (or both) is green, and no red criteria, and no critical scores	Wild-caught and farm-raised seafood rated green are environmentally sustainable, well managed and caught or farmed in ways that cause little or no harm to habitats or other wildlife. These operations align with all of our guiding principles.
Yellow	Final score >2.2, and no more than one red criterion, and no critical scores, and does not meet the criteria for green (above)	Wild-caught and farm-raised seafood rated yellow cannot be considered fully environmentally sustainable at this time. They align with most of our guiding principles, but there is either one conservation concern needing substantial improvement, or there is significant uncertainty associated with the impacts of the fishery or aquaculture operations.
Red	Final Score ≤2.2, or two or more red criteria, or one or more critical scores.	Wild-caught and farm-raised seafood rated red are caught or farmed in ways that have a high risk of causing significant harm to the environment. They do not align with our guiding principles and are considered environmentally unsustainable due to either a critical conservation concern, or multiple areas where improvement is needed.

Disclaimer: All Seafood Watch fishery assessments are reviewed for accuracy by external experts in ecology, fisheries science, and aquaculture. Scientific review does not constitute an endorsement of the Seafood Watch program or its ratings on the part of the reviewing scientists. Seafood Watch is solely responsible for the conclusions reached in this assessment.

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Guiding principles

Monterey Bay Aquarium defines sustainable seafood as seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems, minimize harmful environmental impacts, assure good and fair working conditions, and support livelihoods and economic benefits throughout the entire supply chain.

As one aspect of this vision, Seafood Watch has developed trusted, rigorous standards for assessing the environmental impacts of fishing and aquaculture practices worldwide. Environmentally sustainable wild capture fisheries:

1. **Follow the principles of ecosystem-based fisheries management**

   The fishery is managed to ensure the integrity of the entire ecosystem, rather than solely focusing on maintenance of single species stock productivity. To the extent allowed by the current state of the science, ecological interactions affected by the fishery are understood and protected, and the structure and function of the ecosystem is maintained.

2. **Ensure all affected stocks[1] are healthy and abundant**

   Abundance, size, sex, age and genetic structure of the main species affected by the fishery (not limited to target species) is maintained at levels that do not impair recruitment or long-term productivity of the stocks or fulfillment of their role in the ecosystem and food web.

   Abundance of the main species affected by the fishery should be at, above, or fluctuating around levels that allow for the long-term production of maximum sustainable yield. Higher abundances are necessary in the case of forage species, in order to allow the species to fulfill its ecological role.

3. **Fish all affected stocks at sustainable levels**

   Fishing mortality for the main species affected by the fishery should be appropriate given current abundance and inherent resilience to fishing while accounting for scientific uncertainty, management uncertainty, and non-fishery impacts such as habitat degradation.

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[1]"Affected" stocks include all stocks affected by the fishery, no matter whether target or bycatch, or whether they are ultimately retained or discarded.

The cumulative fishing mortality experienced by affected species must be at or below the level that produces maximum sustainable yield for single-species fisheries on typical species that are at target levels.

Fishing mortality may need to be lower than the level that produces maximum sustainable yield in certain cases such as forage species, multispecies fisheries, highly vulnerable species, or fisheries with high uncertainty.

For species that are depleted below target levels, fishing mortality must be at or below a level that allows the species to recover to its target abundance.

4. **Minimize bycatch**

   Seafood Watch defines bycatch as all fisheries-related mortality or injury other than the retained catch. Examples include discards, endangered or threatened species catch, pre-catch mortality and ghost fishing. All discards, including those released alive, are considered bycatch unless there is valid scientific evidence of high post-release survival and there is no documented evidence of negative impacts at the population level.

   The fishery optimizes the utilization of marine and freshwater resources by minimizing post-harvest loss and by efficiently using marine and freshwater resources as bait.

5. **Have no more than a negligible impact on any threatened, endangered or protected species**

   The fishery avoids catch of any threatened, endangered or protected (ETP) species. If any ETP species are inadvertently caught, the fishery ensures and can demonstrate that it has no more than a negligible impact on these populations.

6. **Are managed to sustain the long-term productivity of all affected species**

   Management should be appropriate for the inherent resilience of affected marine and freshwater life and should incorporate data sufficient to assess the affected species and manage fishing mortality to ensure little risk of depletion. Measures should be implemented and enforced to ensure that fishery mortality does not threaten the long term productivity or ecological role of any species in the future.

   The management strategy has a high chance of preventing declines in stock productivity by taking into account the level of uncertainty, other impacts on the stock, and the potential for increased pressure in the future.

   The management strategy effectively prevents negative population impacts on bycatch species, particularly species of concern.

7. **Avoid negative impacts on the structure, function or associated biota of aquatic habitats where fishing occurs**

The fishery does not adversely affect the physical structure of the seafloor or associated biological communities.

If high-impact gears (e.g. trawls, dredges) are used, vulnerable seafloor habitats (e.g. corals, seamounts) are not fished, and potential damage to the seafloor is mitigated through substantial spatial protection, gear modifications and/or other highly effective methods.

8. **Maintain the trophic role of all aquatic life**

   All stocks are maintained at levels that allow them to fulfill their ecological role and to maintain a functioning ecosystem and food web, as informed by the best available science.

9. **Do not result in harmful ecological changes such as reduction of dependent predator populations, trophic cascades, or phase shifts**

   Fishing activities must not result in harmful changes such as depletion of dependent predators, trophic cascades, or phase shifts.

   This may require fishing certain species (e.g., forage species) well below maximum sustainable yield and maintaining populations of these species well above the biomass that produces maximum sustainable yield.

10. **Ensure that any enhancement activities and fishing activities on enhanced stocks do not negatively affect the diversity, abundance, productivity, or genetic integrity of wild stocks**

    Any enhancement activities are conducted at levels that do not negatively affect wild stocks by reducing diversity, abundance or genetic integrity.

    Management of fisheries targeting enhanced stocks ensures that there are no negative impacts on the wild stocks, in line with the guiding principles described above, as a result of the fisheries.

    Enhancement activities do not negatively affect the ecosystem through density dependent competition or any other means, as informed by the best available science.

Final Ratings

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Almaco jack Gulf of America Stock - Diving - GFMC	1.732	2.236	3.000	3.873	Yellow (2.590)
Almaco jack Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.732	1.000	3.000	3.464	Red (2.060)
Banded rudderfish Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Black grouper Southern Atlantic Coast/Gulf of America Stock - Diving	2.644	2.236	3.000	3.873	Yellow (2.879)
Black grouper Southern Atlantic Coast/Gulf of America Stock - Diving - SAFMC	2.644	1.000	3.000	3.873	Yellow (2.354)
Black grouper Southern Atlantic Coast/Gulf of America Stock - Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Black grouper Southern Atlantic Coast/Gulf of America Stock - Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Blackfin snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Blue tilefish/Golden tilefish Gulf of America Stock - Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Blue tilefish/Golden tilefish Southern Atlantic Coast Stock - Set longlines - Golden tilefish fishery	3.318	5.000	4.000	2.449	Green (3.570)
Blue tilefish/Golden tilefish Gulf of America Stock - Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Blue tilefish/Golden tilefish Southern Atlantic Coast Stock - Vertical lines	3.318	1.000	3.000	3.464	Yellow (2.423)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Blueline tilefish Gulf of America Stock - Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Blueline tilefish Southern Atlantic Coast Stock - Set longlines	5.000	1.000	3.000	2.449	Yellow (2.462)
Blueline tilefish Gulf of America Stock - Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Blueline tilefish Southern Atlantic Coast Stock - Vertical lines	5.000	1.000	3.000	3.464	Yellow (2.685)
Gag Gulf of America Stock - Diving	2.236	2.236	3.000	3.873	Yellow (2.761)
Gag Southern Atlantic Coast Stock - Diving	1.000	1.526	3.000	3.873	Red (2.052)
Gag Gulf of America Stock - Set longlines	2.236	1.732	3.000	2.449	Yellow (2.310)
Gag Gulf of America Stock - Vertical lines	2.236	2.236	3.000	3.464	Yellow (2.685)
Gag Southern Atlantic Coast Stock - Vertical lines	1.000	1.000	3.000	3.464	Red (1.795)
Gray snapper Gulf of America Stock - Diving	5.000	2.236	3.000	3.873	Green (3.376)
Gray snapper Southern Atlantic Coast Stock - Diving	2.644	1.000	3.000	3.873	Yellow (2.354)
Gray snapper Gulf of America Stock - Set longlines	5.000	1.732	3.000	2.449	Yellow (2.824)
Gray snapper Gulf of America Stock - Vertical lines	5.000	2.236	3.000	3.464	Green (3.283)
Gray snapper Southern Atlantic Coast Stock - Vertical lines	2.644	1.000	3.000	3.464	Yellow (2.289)
Gray triggerfish Gulf of America Stock - Diving	2.644	2.236	3.000	3.873	Yellow (2.879)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Gray triggerfish Southern Atlantic Coast Stock - Diving	1.526	1.000	3.000	3.873	Red (2.052)
Gray triggerfish Gulf of America Stock - Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Gray triggerfish Gulf of America Stock - Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Gray triggerfish Southern Atlantic Coast Stock - Vertical lines	1.526	1.000	3.000	3.464	Red (1.996)
Greater amberjack Gulf of America Stock - Diving	2.236	2.236	3.000	3.873	Yellow (2.761)
Greater amberjack Southern Atlantic Coast Stock - Diving	4.284	1.000	3.000	3.873	Yellow (2.656)
Greater amberjack Gulf of America Stock - Set longlines	2.236	1.732	3.000	2.449	Yellow (2.310)
Greater amberjack Southern Atlantic Coast Stock - Set longlines	4.284	1.000	3.000	2.449	Yellow (2.369)
Greater amberjack Gulf of America Stock - Vertical lines	2.236	2.236	3.000	3.464	Yellow (2.685)
Greater amberjack Southern Atlantic Coast Stock - Vertical lines	4.284	1.000	3.000	3.464	Yellow (2.583)
Hogfish Eastern Gulf of America/West Florida Stock - Diving - GFMC	4.284	2.236	3.000	3.873	Green (3.248)
Hogfish Georgia through North Carolina (GA/NC) Stock - Diving	2.644	1.000	3.000	3.873	Yellow (2.354)
Hogfish Florida Keys/East Florida Stock - Diving	2.236	1.000	3.000	3.873	Yellow (2.258)
Hogfish Georgia through North Carolina (GA/NC) Stock - Vertical lines	2.644	1.000	3.000	3.464	Yellow (2.289)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Hogfish Florida Keys/East Florida Stock - Vertical lines	2.236	1.000	3.000	3.464	Red (2.196)
Jolthead porgy Set longlines - GFMC	2.644	1.732	3.000	2.449	Yellow (2.408)
Knobbed porgy Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Lane snapper Gulf of America Stock - Set longlines	1.916	1.732	3.000	2.449	Red (2.222)
Lane snapper Gulf of America Stock - Vertical lines	1.916	2.236	3.000	3.464	Yellow (2.583)
Lane snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Lesser amberjack Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Mutton snapper Southern Atlantic Coast/Gulf of America Stock - Diving	5.000	2.236	3.000	3.873	Green (3.376)
Mutton snapper Southern Atlantic Coast/Gulf of America Stock - Diving	5.000	1.000	3.000	3.873	Yellow (2.761)
Mutton snapper Southern Atlantic Coast/Gulf of America Stock - Set longlines	5.000	1.732	3.000	2.449	Yellow (2.824)
Mutton snapper Southern Atlantic Coast/Gulf of America Stock - Vertical lines	5.000	2.236	3.000	3.464	Green (3.283)
Mutton snapper Southern Atlantic Coast/Gulf of America Stock - Vertical lines	5.000	1.000	3.000	3.464	Yellow (2.685)
Queen snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Queen triggerfish Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Red grouper Gulf of America Stock - Diving	5.000	2.236	3.000	3.873	Green (3.376)
Red grouper Southern Atlantic Coast Stock - Diving	1.732	1.000	3.000	3.873	Red (2.118)
Red grouper Gulf of America Stock - Set longlines	5.000	1.732	3.000	2.449	Yellow (2.824)
Red grouper Southern Atlantic Coast Stock - Set longlines	1.732	1.000	3.000	2.449	Red (1.889)
Red grouper Gulf of America Stock - Vertical lines	5.000	2.236	3.000	3.464	Green (3.283)
Red grouper Southern Atlantic Coast Stock - Vertical lines	1.732	1.000	3.000	3.464	Red (2.060)
Red porgy Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Red porgy Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Red porgy Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.732	1.000	3.000	3.464	Red (2.060)
Red snapper Gulf of America Stock - Diving	3.413	2.236	3.000	3.873	Yellow (3.069)
Red snapper Gulf of America Stock - Set longlines	3.413	1.732	3.000	2.449	Yellow (2.567)
Red snapper Gulf of America Stock - Vertical lines	3.413	2.236	3.000	3.464	Yellow (2.984)
Red snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000	3.000	3.464	Red (1.795)
Scamp Gulf of America Stock - Set longlines	5.000	1.732	3.000	2.449	Yellow (2.824)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Scamp Gulf of America Stock - Vertical lines	5.000	2.236	3.000	3.464	Green (3.283)
Scamp Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.236	1.000	3.000	3.464	Red (2.196)
Silk snapper Gulf of America Stock - Set longlines	2.644	1.732	3.000	2.449	Yellow (2.408)
Silk snapper Gulf of America Stock - Vertical lines	2.644	2.236	3.000	3.464	Yellow (2.800)
Silk snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.644	1.000	3.000	3.464	Yellow (2.289)
Snowy grouper Gulf of America Stock - Set longlines - GFMC	1.732	1.732	3.000	2.449	Red (2.167)
Snowy grouper Southern Atlantic Coast Stock - Set longlines	1.000	1.732	3.000	2.449	Red (1.889)
Snowy grouper Southern Atlantic Coast Stock - Vertical lines	1.000	1.000	3.000	3.464	Red (1.795)
Speckled hind Gulf of America Stock - Set longlines - GFMC	1.732	1.732	3.000	2.449	Red (2.167)
Vermilion snapper Gulf of America Stock - Set longlines	4.284	1.732	3.000	2.449	Yellow (2.717)
Vermilion snapper Gulf of America Stock - Vertical lines	4.284	2.236	3.000	3.464	Yellow (3.159)
Vermilion snapper Southern Atlantic Coast Stock - Vertical lines - SAFMC	4.284	1.000	3.000	3.464	Yellow (2.583)
Warsaw grouper Gulf of America Stock - Set longlines - GFMC	1.732	1.732	3.000	2.449	Red (2.167)
Wreckfish Southern Atlantic Coast Stock - Vertical lines - SAFMC - Wreckfish (target)	2.644	5.000	4.000	3.464	Green (3.679)

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Yellowedge grouper Gulf of America Stock - Set longlines	5.000	1.732	3.000	2.449	Yellow (2.824)
Yellowedge grouper Southern Atlantic Coast Stock - Set longlines	1.732	1.000	3.000	2.449	Red (1.889)
Yellowedge grouper Gulf of America Stock - Vertical lines	5.000	2.236	3.000	3.464	Green (3.283)
Yellowedge grouper Southern Atlantic Coast Stock - Vertical lines	1.732	1.000	3.000	3.464	Red (2.060)
Yellowmouth grouper Southern Atlantic Coast Stock - Diving	2.236	1.000	3.000	3.873	Yellow (2.258)
Yellowmouth grouper Gulf of America Stock - Vertical lines - GFMC	5.000	2.236	3.000	3.464	Green (3.283)
Yellowmouth grouper Southern Atlantic Coast Stock - Vertical lines	2.236	1.000	3.000	3.464	Red (2.196)
Yellowtail snapper Southern Atlantic Coast/Gulf of America Stock - Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)	5.000	5.000	4.000	3.464	Green (4.314)

Summary

Summary of the U.S. South Atlantic and Gulf reef fish assessment

This Seafood Watch assessment evaluates the environmental sustainability of the South Atlantic and Gulf* vertical line, bottom longline, and dive reef fish fisheries. Rated species include snappers, groupers, triggerfishes, porgies, jacks, hogfish, tilefishes, and wreckfish.

Seafood Watch assessments consider factors such as stock health, impacts on other species, management effectiveness and implementation, and environmental impacts on habitat. Based on these factors, Seafood Watch rates the following species/fisheries as green: wreckfish and yellowtail snapper caught in targeted vertical line fisheries, along with blue/golden tilefish caught in the targeted bottom longline fishery, and some of the Gulf dive and vertical line fisheries. The other species/fisheries combinations receive a mix of yellow and red ratings.

Reef fish overview

Seafood Watch maintains rigorous, science-based standards for fisheries and aquaculture that align with the U.N. Code of Conduct for Responsible Fisheries. Using those standards, Seafood Watch assesses fisheries or aquaculture products found in North American markets. The reef fish fisheries of the U.S. South Atlantic and Gulf account for a significant share of the U.S. market for these species, although imports of certain species (or species groups) exceed the catch in the U.S.

Assessment highlights

In general, these fisheries catch many species: some have healthy stock status with no overfishing, while others have been overfished or are subject to overfishing for many years. The targeted vertical line fisheries for yellowtail snapper off southern Florida and wreckfish off South Carolina and Georgia, and the blue/golden tilefish longline fishery in the South Atlantic are exceptions. In these fisheries, the target is the only species caught in significant volumes. The yellowtail snapper stock is likely healthy and not subject to overfishing, while the blue/golden tilefish and wreckfish stock statuses are less clear. The Gulf dive fishery catches a number of species, but none of the main species caught is currently of major concern. For the other fisheries, at least one stock caught is not healthy, and/or the catch is too high to be sustainable. Turtles (particularly loggerhead) are caught in the vertical line and bottom longline fisheries, and, though data are poor, it is unlikely that any of the fisheries is a major contributor to overall mortality. There are no known serious problems with the incidental catch of mammals, seabirds, or other Endangered Species Act-listed species (such as smalltooth sawfish) in any of the fisheries. See Criterion 1 and Criterion 2.

These fisheries are managed by a combination of state and federal agencies. The states manage fisheries in state waters (typically out to 3 nautical miles, but in some cases out to 9 nm). The federal fisheries (out to 200 nm) for the U.S. South Atlantic reef fish are managed by the National Oceanic and Atmospheric Administration (NOAA) and the South Atlantic Fishery Management Council (SAFMC) through the Snapper-Grouper Fishery of the South Atlantic

Region Fishery Management Plan (FMP), while similar fisheries in the Gulf are managed by NOAA and the Gulf Fishery Management Council (GFMC) through the Reef Fish Resources of the Gulf of Mexico FMP. Management includes strategies such as stock surveys and assessments, harvest limits, and regulations on gear use, among other tools.

Management effectiveness is considered "moderately effective" overall for most fisheries in this assessment. Persistent challenges in managing the impacts on numerous stocks simultaneously are the primary reason that management is not considered highly effective, particularly when stocks remain overfished or are subject to overfishing. Because this is not a problem with the yellowtail, wreckfish, and South Atlantic blue/golden tilefish fisheries, these are considered "highly effective" for management. See Criterion 3.

There are minimal concerns that vertical-line fisheries negatively affect seafloor habitat, because the gears generally do not come into contact with the bottom. But bottom longlines can cause habitat impacts, and few measures are in place to mitigate those impacts. In addition, in both regions, broad policies to protect ecosystem functioning are in place; however, none yet ensure that catch limits account for the role of the main catch species in their respective food webs. See Criterion 4.

* The Gulf of Mexico has recently been renamed the Gulf of America in the United States. Still, in an international context, it remains the Gulf of Mexico, so that name is used here for the body of water. But we have used the name Gulf of America to refer to U.S.-specific entities, such as fish stock names or management agencies.

Introduction

Scope of the analysis and ensuing rating

This Seafood Watch assessment covers the main commercial fisheries for snapper, grouper, and other reef fish in the U.S. South Atlantic and Gulf. *Black seabass is among these species, but most of the catch is farther north in the Mid-Atlantic, so this species is covered in other Seafood Watch assessments.* The fishery is limited entry, with about 500 vessels permitted in the South Atlantic and about 900 in the Gulf. The fisheries primarily use vertical hook-and-line gear (handlines, bandit gear) and bottom longlines. Other gear types include spearfishing by divers and a modified buoy fishery (the latter is not covered in this Seafood Watch assessment).

In the South Atlantic, landings are dominated by the vertical line fleet that primarily targets yellowtail snapper, vermilion snapper, greater amberjack, red snapper, gag grouper, and red porgy. The yellowtail snapper fishery operates on both coasts of Florida and catches little else. The wreckfish fishery primarily operates off South Carolina and catches little else. The bottom longline fishery for snapper grouper (different than the longline fishery for sharks) primarily lands snowy grouper, yellowedge grouper, and blueline tilefish. A number of "fisheries" target specific species and catch little else, including the vertical line fishery for yellowtail snapper that operates on both coasts of Florida, the vertical line fishery for wreckfish off South Carolina, and the bottom longline fishery for blue/golden tilefish. These fisheries are separated out in the present assessment. Greater amberjack, gag grouper, gray snapper, and other species are also landed in the commercial dive fishery.

In the Gulf, landings are also dominated by the vertical line fleet, though the bottom longline catch is relatively higher than in the South Atlantic. Both fisheries catch red snapper, red grouper, and gag grouper. The vertical line fleet also catches vermilion snapper, yellowtail snapper (the latter is the same fishery as noted previously in the South Atlantic section), and red porgy. The longline fleet catches yellowedge grouper, snowy grouper, and tilefish, and the dive fishery also catches a number of these species. Although all these descriptions focus on the species that account for the largest share of the catch in each fishery, ratings are also provided for many commercially less important species.

Species Overview

The descriptions in these sections are taken (verbatim in many cases) from the Snapper-Grouper Fishery Management Plan (SAMFC 1983) and Gulf of Mexico Reef Fish Management Plan (GMFMC 1981) as a quick reference; readers are encouraged to review those documents for more detail.

The snapper-grouper fishery in the U.S. South Atlantic and the reef fish fishery in the Gulf of Mexico catch a number of tropical and subtropical species that live close to the seafloor. The snapper-grouper fishery extends from the North Carolina–Virginia border to the end of the Florida Keys and is managed by the South Atlantic Fishery Management Council (SAMFC) and

the territorial seas of the states. The reef fish fishery is managed by the Gulf Fishery Management Council (GFMC) and the states and extends from the SAFMC jurisdiction in the Florida Keys to the United States–Mexico border (Figure 1).

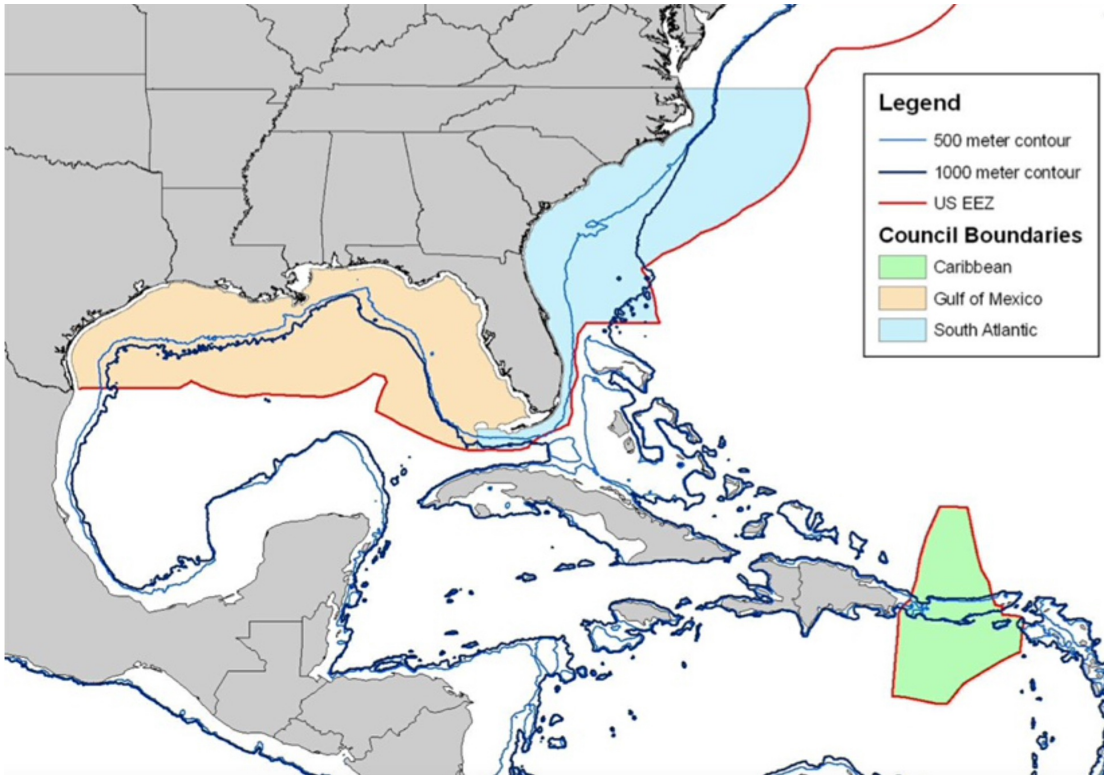


Figure 1: Map of South Atlantic and Gulf of Mexico management extent (SEDAR 2008a).

The species caught in these fisheries include members of the families of snappers (*Lutjanidae*), sea basses and groupers (*Serranidae*), porgies (*Sparidae*), tilefishes (*Malacanthidae*), grunts (*Pomadasyidae*), triggerfishes (*Balistidae*), wrasses (*Labridae*), and jacks (*Carangidae*). Following the Seafood Watch naming convention, common names in this assessment are first from the U.S. FDA (USFDA 2023), then from the FAO/ASFIS (FAO/ASFIS 2023) when the FDA does not provide a common name, and finally from NOAA when neither the FDA nor the FAO provides a common name. Scientific names are from NOAA (NOAA 2023).

Snappers (*Lutjanidae*)

Snappers generally have a long triangular face with the upper margin sloping more strongly than the lower; jaws are equal or the lower is slightly projecting. Nearly all species have some enlarged canine teeth (hence the name "snapper"). Coloration varies widely among species, but deeper water species tend to be more red.

Groupers and sea basses (*Serranidae*)

Sea basses are covered in a different Seafood Watch assessment because the U.S. commercial

catch occurs primarily in the Mid-Atlantic. Groupers and sea basses are characterized by a robust body, a large mouth with the lower jaw often projecting slightly beyond the upper jaws, and bands of slender sharp depressible teeth with usually a few stout fixed canines; body scales are small. Some species are strikingly colored, others are drab, and many have considerable ability to alter the density of their color to match the surroundings; deeper water species tend to have more red.

Jacks (*Carangidae*)

Jacks are silvery fishes, darker dorsally, and typically have two detached spines in front of the anal fin. They are compact and strong-swimming. Scales are small, the caudal fin is deeply forked or lunate, and the teeth are small to moderate in size.

Triggerfishes (*Balistidae*)

Triggerfishes are relatively deep-bodied and moderately compressed with a long, unattenuated snout, a highly placed eye, and usually a terminal mouth; jaws are short and strong and contain protruding incisiform teeth. The skin is tough and covered with modified plate-like scales.

Porgies (*Sparidae*)

Porgies are deep-bodied and compressed, with a small horizontal mouth placed low on the head. The sides of the jaws are broad and blunt. Teeth are stout; low and molariform laterally, canines or incisors anteriorly. Several species are barred or striped, but generally porgies have a bright silvery appearance. They have a single continuous dorsal fin.

Grunts (*Pomadasyidae*)

In grunts, the mouth is low on the head, the upper jaw projects slightly in front of the lower, and no prominent canine teeth are present. The tail is generally deeply notched.

Hogfish (wrasses: *Labridae*)

Hogfish is a species of wrasse that is deep-bodied like a snapper. The first three dorsal spines are long and streamer-like, the tail is lunate, and males have larger snouts and mouths. Color is highly variable but most often uniform or mottled gray to reddish brown, almost always with a black spot at the rear base of the dorsal fin.

Wreckfish (*Polyprion americanus*)

Wreckfish is a deepwater marine fish (Roberts 1989) that inhabits continental slopes, oceanic islands, and seamounts at depths of 50 to 1,000 meters (m) (Sedberry 2001a; Peres and Klippel 2003). Wreckfish is a long-lived, slow-growing species found throughout the Atlantic Ocean and in some areas of the Indian and Pacific Oceans. In the United States, the wreckfish fishery occurs mostly between 100 and 125 miles southeast of Charleston, off the coasts of South Carolina and Georgia. The Blake Plateau is located within this region and is an area that provides a complex bottom feature with great topographic relief (Sedberry 2001b; Goldman and Sedberry 2011). The Plateau is considered an important habitat and spawning ground for

wreckfish {Goldman and Sedberry 2010}. Wreckfish lurks in caves and comes out to feed during the day.

Tilefishes

Tilefish are elongate with long dorsal and anal fins. They are bottom dwellers, frequently found in the same habitat as snappers and groupers.

Production Statistics

Of the species rated in this assessment, snappers dominate commercial landings with around 5,000 MT annually for the last decade (Figure 2). Groupers make up most of the rest of the landings, with the remaining species now accounting for less than 10% of the summed landings.

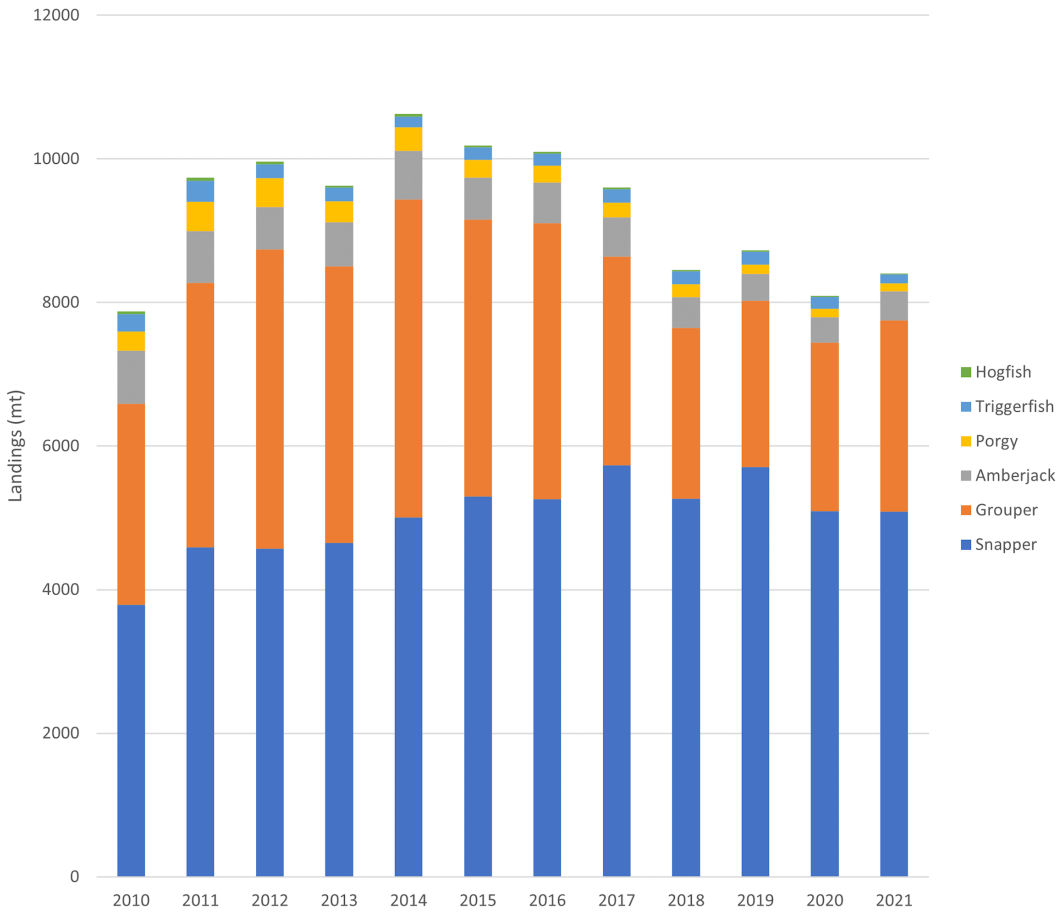


Figure 2: U.S. commercial landings of snappers, groupers, jacks, porgies, triggerfishes, and hogfish, 2010–21 (Gulf of Mexico and South Atlantic only; landings of these species are negligible north of North Carolina, and landings of snappers from Hawaii are excluded). Source: NOAA commercial landings (NOAA 2023).

Catch by gear type

South Atlantic

Landings data

Landings data by gear type were obtained for the U.S. South Atlantic, as well as for west Florida ports in the Gulf, through a data request to the Atlantic Coastal Cooperative Statistics Program (https://www.accsp.org/) (see Appendix D). Confidentiality rules forced data aggregation into relatively broad gear categories and regions (rather than states) and for a 5-year period (2018–22) rather than by year (Table 1). Thus, the available landings data only allow for relatively broad ratings that do not capture more regional/local differences in catch composition.

Table 1: Nonconfidential landings of reef fish species by U.S. South Atlantic fisheries (summed 2018–22). Blank cells do not necessarily indicate no landings, as there could be confidential landings. Commercial fisheries are stratified by gear grouping. See Appendix D for more information regarding the gear types in each grouping. Cells in blue denote stocks that account for ≥ 5% of the landings for that gear type; cells in yellow denote stocks that account for ≥ 20% of the mortality across all fisheries in this table (including recreational). For the purposes of this Seafood Watch assessment, "Hook-and-Line" is considered synonymous with "Vertical line," "Long Lines" is synonymous with "Set longlines," and "By Hand" is synonymous with "Diving."

Species	Commercial catch (live MT)				
	Hook-and-Line	Long Lines	By Hand	Pots and Traps	All Other Gears
SNAPPER, YELLOWTAIL	3,051	2	1	1	241
SNAPPER, VERMILION	1,798	0	3	13	1
AMBERJACK, GREATER	1,066	8	84	0	32
BASS, BLACK SEA	122	0	1	239	453
GROUPER, GAG	482	0	110	0	0
TRIGGERFISH, GRAY	422	0	13	7	0
GROUPER, SNOWY	359	25	3		1
JACK, ALMACO	308	0	13	0	5
WRECKFISH	319				0
SNAPPER, RED	252	1	22	0	14

TILEFISH, BLUELINE	193	45	0	0	3
PORGY, RED	208	0	1	2	0
SNAPPER, GRAY	167	0	29	0	5
SCUP	0			0	185
SNAPPER, MUTTON	138	4	22	4	4
SCAMP	130	0	24	1	0
GROUPER, BLACK	56	1	87	1	1
SNAPPER, SILK	78	0	0	0	0
GROUPER, RED	51	9	16	0	2
GROUPER, YELLOWEDGE	33	23	0		0
HOGFISH	15		39	0	0
RUDDERFISH, BANDED	37	0	0	0	1
GRUNT, WHITE	24	0	0	6	0
PORGY, KNOBBED	21	0	0	1	1
SPADEFISH, ATLANTIC	1		4	0	14
AMBERJACK, LESSER	8		4		4
GROUPER, YELLOWMOUTH	3		12		
SNAPPER, CUBERA	8		4		1
PORGY, JOLTHEAD	5	0	0	6	1
HIND, ROCK	9		2		
JACK, BAR	5	0	0	0	2
HIND, RED	7		0	0	0
SNAPPER, LANE	6	0	0	0	0
SNAPPER, BLACKFIN	4	0	0		
TRIGGERFISH, OCEAN	1		2	0	0
TILEFISH, SAND	3		0	0	0
GROUPER, YELLOWFIN	1		2		

SNAPPER, QUEEN	2	0	0		0
TOMTATE	1		0	0	0
GRAYSBY	0		0	0	0
GROUPER, MISTY	1				
BASS, ROCK SEA	0		0	0	
COTTONWICK			0	0	0
PORGY, WHITEBONE	0				
BASS, BANK SEA	0			0	
MARGATE	0		0	0	
HIND, SPECKLED	0	0			
PORGY, SAUCEREYE	0				
CONEY	0				
GROUPER, WARSAW	0	0			
WENCHMAN	0	0			
TILEFISHES	0	0			
PORGY, LONGSPINE					0
TILEFISH, GOLDFACE				0	

Gulf

Landings data

A request for landings data by gear type to the Gulf States Marine Fisheries Commission (https://www.gsmfc.org/fin-dms) proved that gear-specific landings data for the Gulf were even more challenging to obtain than for the South Atlantic, because any stratification of landings by gear type is considered confidential by Louisiana, Mississippi, and Alabama. The ACCSP data noted in Table 1 provide landings data for the west coast of Florida in the Gulf, which accounts for the majority of the commercial landings of most of the reef fishes in the Gulf (Table 2). Even so, and similar to the South Atlantic, the available landings data only allow for relatively broad ratings that do not capture more regional/local differences in catch composition.

Table 2: Nonconfidential landings of reef fish species by U.S. Gulf of Mexico fisheries landing in western Florida (summed 2018–22). Blank cells do not necessarily indicate no landings, as there could be confidential landings. Commercial fisheries are stratified by gear grouping. See Appendix D for more information regarding gear types in each grouping. Cells in blue denote stocks that account for ≥ 5% of the landings for that gear type; cells in yellow denote stocks that account for ≥ 20% of the mortality across all fisheries in this table.

Species	Commercial catch (live mt)				
	Hook-and-Line	Long Lines	By Hand	Pots and Traps	All Other Gears
SNAPPER, RED	5,379	1,025	58	0	219
GROUPER, RED	1,926	4,376	32	0	140
SNAPPER, VERMILION	1,648	8	5	0	23
GROUPER, GAG	802	528	99	0	32
GROUPER, YELLOWEDGE	47	1,217	0		0
SNAPPER, YELLOWTAIL	767	2	2		44
AMBERJACK, GREATER	265	45	146		10
SCAMP	131	151	5		3
PORGY, RED	257	19	1		3
TILEFISH, BLUELINE	17	235	0		1
SNAPPER, GRAY	135	32	42	0	12
BASS, BLACK SEA	39	0	0	176	2
GROUPER, SNOWY	36	179	0		0
SNAPPER, MUTTON	23	149	3	0	1
JACK, BAR	67	12	3		51
HIND, SPECKLED	12	110	0		1
TRIGGERFISH, GRAY	100	8	4	0	3
GROUPER, BLACK	15	44	13	0	1
SNAPPER, SILK	42	26	1	0	2
SNAPPER, LANE	35	12	1	0	2

JACK, ALMACO	25	15	7	0	1
PORGY, JOLTHEAD	13	24	1	0	0
SNAPPER, QUEEN	6	18	0		0
HOGFISH	1	0	22	0	0
RUDDERFISH, BANDED	19	0	0	0	0
BASS, ROCK SEA	1			19	1
GROUPER, WARSAW	9	8	0		0
SNAPPER, BLACKFIN	3	9	0		0
SPADEFISH, ATLANTIC	0		0	0	10
PORGY, KNOBBED	6	1	0	0	0
GRUNT, WHITE	1	0	0	5	0
HIND, RED	1	4	0		0
BASS, BANK SEA	1			3	
AMBERJACK, LESSER	2	0	0		0
SNAPPER, CUBERA	1	1	1		0
WENCHMAN	2	0			0
HIND, ROCK	1	0	0		0
TILEFISH, SAND	0	0	0		0
GROUPER, YELLOWFIN	0	0	0		
TRIGGERFISH, OCEAN	0	0	0		0
GRAYSBY	0	0	0	0	0
GROUPER, YELLOWMOUTH	0	0	0		0
GROUPER, MISTY	0	0			
PORGY, LONGSPINE	0				0
TILEFISH, GOLDFACE	0	0			
TOMTATE					0
COTTONWICK				0	0

Importance to the US/North American market

The U.S. does not export snapper to other countries (though there may be "export" from one state to another); the domestic catch of snapper is sold solely on the U.S. market (NOAA 2023). Imports of snapper have generally been increasing over the last decade, and have been over 20,000 MT per year in 2020–22 (Figure 3). Imports are dominated by Latin America. Product forms are fresh or frozen, but import data provide no information on whether these are fillets or whole fish. Thus, direct comparison with U.S. production is difficult, but it appears that at least 80% (and probably much more) of the snapper on the U.S. market is imported.

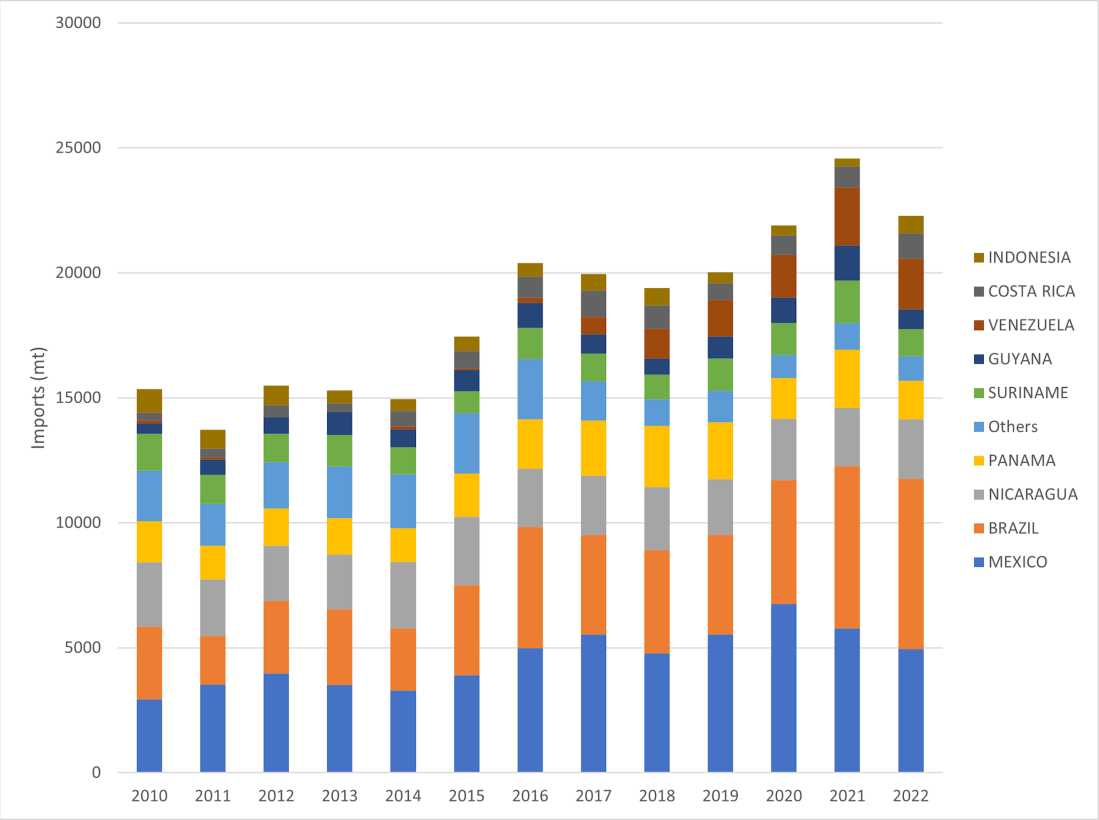


Figure 3: U.S. imports of snapper by country, 2010–22. Source: NOAA Foreign Trade Data (NOAA 2023).

Common and market names

Snapper and associated fisheries in the South Atlantic and Gulf may be sold under a variety of names. For instance, gray snapper may be sold and labeled as gray silk, mangrove snapper, mangrove pargue, mango snapper, pargue, black pargue, black snapper, lawyer, silk, and snapper (Florida Museum 2021a).

Red snapper may be labeled as northern red snapper, sow snapper, rat snapper, mule snapper,

chicken snapper, gulf red snapper, American red snapper, Caribbean red snapper, Pensacola snapper, Mexican red snapper, mutton snapper, pargo, and bream (Florida Museum 2021e; Texas Parks and Wildlife 2021c). Vermilion snapper can be sold as beeliner or bastard snapper (Texas Parks and Wildlife 2021b). Yellowtail snapper is sometimes marketed as cola, yellowtail snapper, and yellowtail (Florida Museum 2021d).

Gray triggerfish is commonly sold as grey triggerfish, filefish, leatherjacket, pig-faced, trigger-fish, triggerfish, common triggerfish, and turbot (Florida Museum 2021b). Greater amberjack may also be called allied kingfish, amberjack, great amberfish, coronado great yellowtail, greater yellowtail, jenny lind, purplish amberjack, rock salmon, sailor's choice, and yellow tail (Florida Museum 2021c; Texas Parks and Wildlife 2021). Hogfish is sometimes misnamed as hog snapper (Sargeant 2020). Lane snapper may also be referred to as candy striper, candy snapper, rainbow snapper, bream, godbless, Mexican snapper, moonlight grunt, pot snapper, redfish, redtailed snapper, snapper, spot snapper, manchego, and williacke (Texas Parks and Wildlife 2021e; Florida Museum 2021h). Mutton snapper is otherwise labeled as mutton fish, king snapper, virgin snapper, and snapper (Florida Museum 2021g).

Primary product forms

Snapper is available both fresh (whole, dressed, headed-and-gutted, fillets) and frozen (dressed, headed-and-gutted, fillets) in the U.S. market. Most fillets are sold with the skin still attached, to assist with species identification (Frimodt and Dore 1995).

Assessments

This section assesses the sustainability of the fishery(s) relative to the Seafood Watch Standard for Fisheries, available at www.seafoodwatch.org. The specific standard used is referenced on the title page of all Seafood Watch assessments.

Criterion 1: Impacts on the Species Under Assessment

This criterion evaluates the impact of fishing mortality on the species, given its current abundance. When abundance is unknown, abundance is scored based on the species' inherent vulnerability, which is calculated using a Productivity-Susceptibility Analysis. The final Criterion 1 score is determined by taking the geometric mean of the abundance and fishing mortality scores. The Criterion 1 rating is determined as follows:

- Score >3.2 = **Green** or Low concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate concern
- Score ≤2.2 = **Red** or High concern

Rating is Critical if Factor 1.3 (Fishing Mortality) is Critical.

Guiding principles

- *Ensure all affected stocks are healthy and abundant.*
- *Fish all affected stocks at sustainable level*

Criterion 1 Summary

Almaco jack			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving - GFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Banded rudderfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Black grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Diving	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast/Gulf of America Stock - Diving - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast/Gulf of America Stock - Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Blackfin snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Blue tilefish/Golden tilefish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Set longlines - Golden tilefish fishery	3.670 Low Concern	3.000 Moderate Concern	**Green (3.318)**
Gulf of America Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Vertical lines	3.670 Low Concern	3.000 Moderate Concern	**Green (3.318)**

Blueline tilefish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Gulf of America Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Gag			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.000 High Concern	1.000 High Concern	**Red (1.000)**
Gulf of America Stock - Set longlines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Gulf of America Stock - Vertical lines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000 High Concern	1.000 High Concern	**Red (1.000)**

Gray snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Diving	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Gulf of America Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Gray triggerfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Diving	2.330 Moderate Concern	1.000 High Concern	**Red (1.526)**
Gulf of America Stock - Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Gulf of America Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Vertical lines	2.330 Moderate Concern	1.000 High Concern	**Red (1.526)**

Greater amberjack			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Gulf of America Stock - Set longlines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Southern Atlantic Coast Stock - Set longlines	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Gulf of America Stock - Vertical lines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**

Hogfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Eastern Gulf of America/West Florida Stock - Diving - GFMC	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Georgia through North Carolina (GA/NC) Stock - Diving	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Florida Keys/East Florida Stock - Diving	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Georgia through North Carolina (GA/NC) Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Florida Keys/East Florida Stock - Vertical lines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**

Jolthead porgy			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Set longlines - GFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Knobbed porgy			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Lane snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	3.670 Low Concern	1.000 High Concern	**Red (1.916)**
Gulf of America Stock - Vertical lines	3.670 Low Concern	1.000 High Concern	**Red (1.916)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Lesser amberjack			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Mutton snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Diving	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast/Gulf of America Stock - Diving	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast/Gulf of America Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Queen snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Queen triggerfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Red grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Diving	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
Gulf of America Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Set longlines	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Vertical lines	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Red porgy			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Red snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Diving	2.330 Moderate Concern	5.000 Low Concern	**Green (3.413)**
Gulf of America Stock - Set longlines	2.330 Moderate Concern	5.000 Low Concern	**Green (3.413)**
Gulf of America Stock - Vertical lines	2.330 Moderate Concern	5.000 Low Concern	**Green (3.413)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000 High Concern	1.000 High Concern	**Red (1.000)**

Scamp			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**

Silk snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Gulf of America Stock - Vertical lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Snowy grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.000 High Concern	1.000 High Concern	**Red (1.000)**
Southern Atlantic Coast Stock - Vertical lines	1.000 High Concern	1.000 High Concern	**Red (1.000)**

Speckled hind			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Vermilion snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Gulf of America Stock - Vertical lines	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**

Warsaw grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Wreckfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC - Wreckfish (target)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Yellowedge grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Gulf of America Stock - Set longlines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Set longlines	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
Gulf of America Stock - Vertical lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Vertical lines	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Yellowmouth grouper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast Stock - Diving	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**
Gulf of America Stock - Vertical lines - GFMC	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Southern Atlantic Coast Stock - Vertical lines	1.000 High Concern	5.000 Low Concern	**Yellow (2.236)**

Yellowtail snapper			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Criterion 1 Assessment

Scoring Guidelines

Factor 1.1 - Abundance

Goal: Stock abundance and size structure of native species is maintained at a level that does not impair recruitment or productivity.

- *5 (Very Low Concern) — Strong evidence exists that the population is above an appropriate target abundance level (given the species' ecological role), or near virgin*

biomass.

- *3.67 (Low Concern) — Population may be below target abundance level, but is at least 75% of the target level, OR data-limited assessments suggest population is healthy and species is not highly vulnerable.*
- *2.33 (Moderate Concern) — Population is not overfished but may be below 75% of the target abundance level, OR abundance is unknown and the species is not highly vulnerable.*
- *1 (High Concern) — Population is considered overfished/depleted, a species of concern, threatened or endangered, OR abundance is unknown and species is highly vulnerable.*

Factor 1.2 - Fishing Mortality

Goal: Fishing mortality is appropriate for current state of the stock.

- *5 (Low Concern) — Probable (>50%) that fishing mortality from all sources is at or below a sustainable level, given the species ecological role, OR fishery does not target species and fishing mortality is low enough to not adversely affect its population.*
- *3 (Moderate Concern) — Fishing mortality is fluctuating around sustainable levels, OR fishing mortality relative to a sustainable level is uncertain.*
- *1 (High Concern) — Probable that fishing mortality from all source is above a sustainable level.*

Almaco jack *(Seriola rivoliana)*

1.1 Abundance

Gulf of America Stock - Diving - GFMC

Southern Atlantic Coast Stock - Vertical lines - SAFMC

High Concern

No comprehensive stock assessments have been conducted on almaco jack in the U.S. South Atlantic or Gulf. According to a data-limited assessment including almaco jack in the Gulf, there is no information regarding stock structure for the species, and no biomass/abundance reference points have been determined by managers (SEDAR 2016c). For management purposes, the stock is grouped with banded rudderfish (*Seriola zonata*) and lesser amberjack (*Seriola fasciata*) in the Gulf of America Jacks Complex and the South Atlantic Jacks Complex. According to NOAA, the "overfished" status for both complexes is "unknown" (NOAA 2025). The species is considered "Least Concern" by the IUCN in the Gulf (Smith-Vaniz et al 2015b) and globally (Smith-Vaniz et al 2015), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a productivity-susceptibility analysis (PSA) can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Seriola rivoliana* suggests a high vulnerability (see Justification), allowing for a score of "high concern" (1) for abundance.

Supplementary Information

Productivity-susceptibility analysis for almaco jack in the Gulf/Southeast Atlantic. Productivity data primarily from (Galbraith et al. 2022) and (Farmer et al 2016) and references therein.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	4.4 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	22.2 yrs

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.13
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	Data unavailable for wild populations, but numbers are in the 100,000s when spawning in captivity (Patrick et al. 2019)
Average maximum size (cm)	< 100	100–300	> 300	2	155 cm FL
Average size at maturity (cm)	< 40	40–200	> 200	2	81.1 cm FL
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.4**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.26
Vulnerability Rating: < 2.64 = Low vulnerability, ≤ 2.64 and ≥ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	High

1.2 Fishing Mortality

Gulf of America Stock - Diving - GFMC

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for almaco jack in the Gulf or U.S. South Atlantic. Therefore, current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Banded rudderfish *(Seriola zonata)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on banded rudderfish in the U.S. South Atlantic or Gulf. For management purposes, the stock is grouped with almaco jack (*Seriola rivoliana*) and lesser amberjack (*Seriola fasciata*) in the Gulf of America Jacks Complex and the South Atlantic Jacks Complex. According to NOAA, the “overfished” status for both complexes is “unknown” (NOAA 2025). The species is considered “Least Concern” by the IUCN in the Gulf of Mexico and globally (Smith-Vaniz et al 2015c; Smith-Vaniz et al 2015d), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for risk of being overfished. The PSA for *Seriola zonata* suggests a moderate vulnerability (see Justification), allowing for a score of “moderate concern” (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for banded rudderfish in the Gulf/Southeast Atlantic. Data primarily from (Galbraith et al. 2022) and (Farmer et al 2016) and references therein.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2.25 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	10.3 yrs
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	1	0.28
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	No data available on this species, but assumed over 20,000 based on other *Seriola* spp.
Average maximum size (cm)	< 100	100–300	> 300	1	69 cm FL
Average size at maturity (cm)	< 40	40–200	> 200	2	41.5 cm FL
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.17**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.035
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for banded rudderfish in the Gulf or U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Black grouper *(Mycteroperca bonaci)*

1.1 Abundance

Southern Atlantic Coast/Gulf of America Stock - Diving

Southern Atlantic Coast/Gulf of America Stock - Diving - SAFMC

Southern Atlantic Coast/Gulf of America Stock - Set longlines

Southern Atlantic Coast/Gulf of America Stock - Vertical lines

Moderate Concern

For management purposes, black grouper in the U.S. Gulf and South Atlantic are considered a single stock that is centered in southern Florida, particularly the Florida keys (SEDAR 2017c). The most recent stock assessment for black grouper (conducted in 2010) found biomass to be over the B_{MSY} estimate (8.29/5.92 = 1.57); however, a stock assessment based on data > 10 years old (SEDAR 2010) is too old to use for scoring (Seafood Watch 2020). An updated stock assessment was attempted more recently, but it was discontinued pending resolution of a number of data issues (SEDAR 2017c). That assessment did provide relative abundance trend data for a number of fisheries, which can be used for scoring in Seafood Watch assessments. But the trends are conflicting, the indices are still hampered by data limitations in most cases, and the most recent data year is 2014 or 2015, depending on the index (SEDAR 2017c). A benchmark stock assessment is planned for 2026–27 (see the assessment schedule here: https://sedarweb.org/sedar-assessments/). In the Gulf, the stock is grouped with scamp, yellowfin grouper, and yellowmouth grouper in the Gulf of America Shallow Water Grouper Complex. According

to NOAA, the "overfished" status for the complex is "unknown" (NOAA 2025). The status of the stock itself (Gulf and South Atlantic, combined) is "not overfished" (NOAA 2025). In lieu of better information, a management designation of "not overfished" allows for a score of "moderate concern" (2.33).

1.2 Fishing Mortality

Southern Atlantic Coast/Gulf of America Stock - Diving

Southern Atlantic Coast/Gulf of America Stock - Diving - SAFMC

Southern Atlantic Coast/Gulf of America Stock - Set longlines

Southern Atlantic Coast/Gulf of America Stock - Vertical lines

Moderate Concern

The most recent update for the South Atlantic stock of black grouper was halted over concerns of misidentifying black grouper and gag grouper; therefore, landings were inconclusive. The 2010 benchmark assessment determined that $F/F_{MSY} = 0.5$ and overfishing was not occurring; however, that assessment was > 10 years old and outdated in regard to applying to the Seafood Watch standard. Thus, fishing mortality relative to a sustainable level is considered unknown, and a score of "moderate concern" (3) is awarded.

Blackfin snapper *(Lutjanus buccanella)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on blackfin snapper in the U.S. South Atlantic or Gulf. For management purposes, the species is grouped with misty grouper, yellowedge grouper, queen snapper, sand tilefish, and silk snapper in the South Atlantic Deepwater Snapper-Grouper Complex and with queen snapper, silk snapper, and wenchman in the Gulf of America Mid-Water Snapper Complex. According to NOAA, the "overfished" status for both complexes is "unknown" (NOAA 2025). The IUCN has determined this species to be of "Least Concern" in the Gulf (Lindeman et al 2016g) and "Data Deficient" globally (Lindeman et al 2016m), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Lutjanus buccanella* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for

abundance.

Supplementary Information

Productivity-susceptibility analysis for blackfin snapper in the Gulf. Productivity data primarily from (Farmer et al 2016) and (Burton et al 2016) and references therein.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	8 yrs
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	1	0.16–0.28 (Burton et al 2016); 0.35 (Farmer et al 2016)
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	no data available, but assumed > 20,000 based on similar species (Lutjanids)
Average maximum size (cm)	< 100	100–300	> 300	1	53–58 cm
Average size at maturity (cm)	< 40	40–200	> 200	1	25 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.0**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	2.973
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for blackfin snapper in the Gulf or U.S. South Atlantic. Therefore, current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Blue tilefish/Golden tilefish *(Lopholatilus chamaeleonticeps)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

The most recent stock assessment of blue/golden tilefish in the Gulf was conducted in 2011 using data through 2009 (SEDAR 2011). That assessment found the then-current spawning biomass to be above SSB_{MSY}, but the results are too old to use for scoring (data > 10 years old). NOAA currently considers the stock not to be overfished with the following explanation: "The most recent assessment for tilefish—Gulf of America (2011) used overfished criteria that have been determined to be the Best Scientific Information Available (BSIA), but a minimum stock size threshold (MSST) has not been adopted in the fishery management plan. Since the stock size is above the biomass target (B_{MSY}), the stock is presumably not overfished" (NOAA 2025). In lieu of an up-to-date assessment, a stock classified as "not overfished" by the management agency allows for a score of "moderate concern" (2.33).

Southern Atlantic Coast Stock - Set longlines - Golden tilefish fishery

Southern Atlantic Coast Stock - Vertical lines

Low Concern

The most recent full stock assessment for blue tilefish in the South Atlantic used data through 2022 (SEDAR 2024c). The assessment determined that the stock is not overfished (SSB/MSST = 1.261 in the base model, with MSST being set at 0.75SSB_{MSY}) (Figure 4), but with significant uncertainty across models such that the spawning stock size is likely below that at SSB_{MSY} ($SSB_{2022}/SSB_{MSY2022}$ = 0.78) (SEDAR 2024c). A recent (data < 5 years old) stock assessment with a finding that SSB/SSB_{MSY} < 1 but > 0.75 allows for a score of "low concern" (3.67).

Supplementary Information

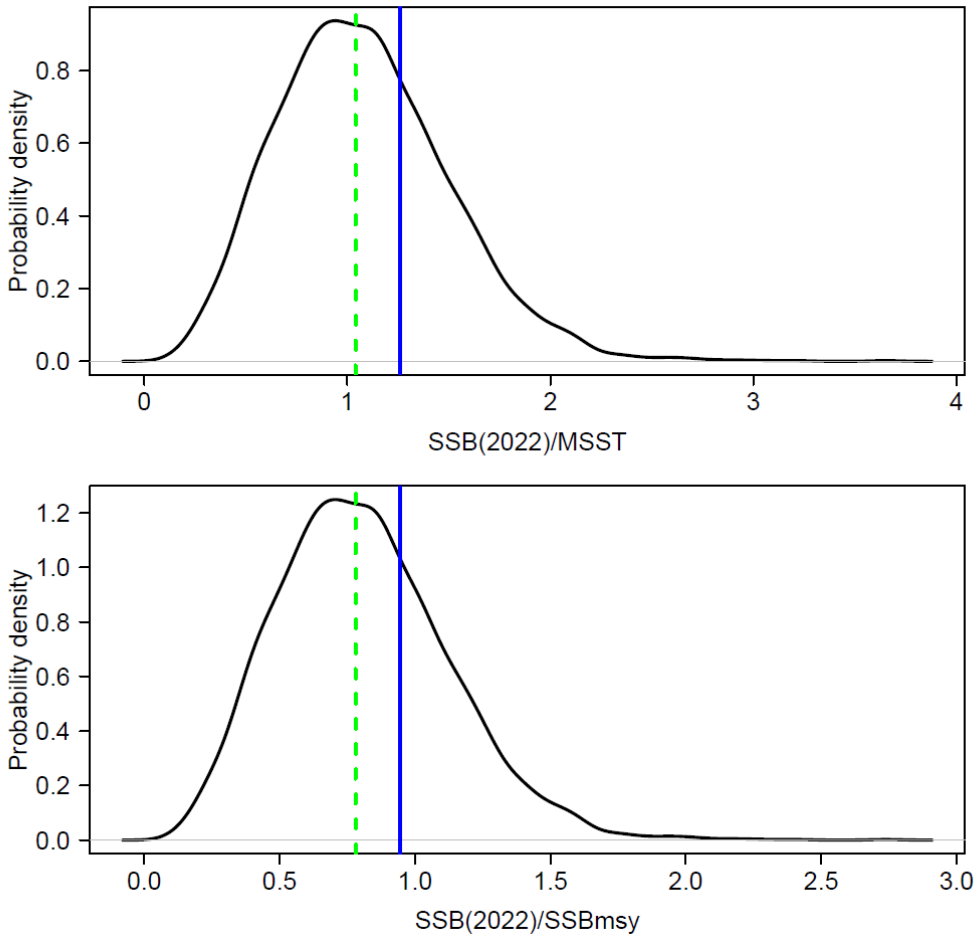


Figure 4: Probability densities of terminal status estimates from MCBE analysis of the Beaufort Assessment Model (n = 3018). The solid blue vertical line represents point estimates from the BAM base run; the dashed green vertical line represents medians from the MCBE runs. Image and text from (SEDAR 2024c).

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

The 2011 blue/golden tilefish assessment concluded that the stock was unlikely to be undergoing overfishing, but it is too old to use for scoring. NOAA currently considers the stock not to be undergoing overfishing (NOAA 2025). Because there is no recent stock assessment, a score of "moderate concern" (3) is given.

Southern Atlantic Coast Stock - Set longlines - Golden tilefish fishery

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

The most recent stock assessment for blue/golden tilefish in the U.S. South Atlantic found the stock fully exploited in the base model ($F_{2020-22}/F_{MSY} = 1$)(Figure 5) but is undergoing overfishing in some analyses ($F_{2020-22}/F_{MSY} = 1.16$) (SEDAR 2024c). NOAA currently considers the stock not to be undergoing overfishing (NOAA 2025). The combination of these factors allows for a score of "moderate concern" (3).

Supplementary Information

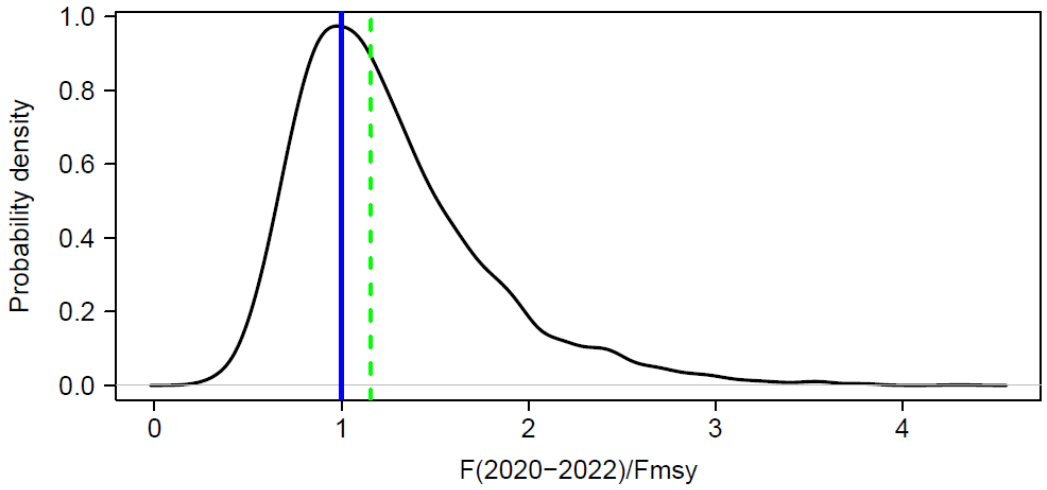


Figure 5: Probability densities of terminal status estimates from MCBE analysis of the Beaufort Assessment Model (n = 3018). The solid blue vertical line represents point estimates from the BAM base run; the dashed green vertical line represents medians from the MCBE runs. Image and text from (SEDAR 2024c).

Blueline tilefish *(Caulolatilus microps)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

Blueline tilefish in the Gulf and U.S. South Atlantic are considered to be a single stock (SEDAR 2017b), but stock assessments have only been conducted for the South Atlantic portion of the stock. For management purposes, blueline tilefish in the Gulf is grouped with blue/golden tilefish and goldface tilefish. According to NOAA, the current status is "unknown" regarding whether or not the stock is overfished (NOAA 2025). The IUCN has determined this species to be "Data Deficient" in the Gulf of Mexico (Ross et al 2015b), which precludes a score (as does the age of that assessment). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Caulolatilus microps* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for blueline tilefish in the Gulf. Most life history values are from (SEDAR 2025c) and references therein, with the fecundity value from https://safmc.net/species/tilefish-blueline/.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	—	data not found
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	NA	40 years
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	2	0.16
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	> 1 million eggs

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average maximum size (cm)	< 100	100–300	> 300	1	67.9 cm
Average size at maturity (cm)	< 40	40–200	> 200	1	30.5 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.2**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.046
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Very Low Concern

Blueline tilefish in the Gulf and U.S. South Atlantic is considered a single stock (SEDAR 2017b), but stock assessments have only been conducted for the South Atlantic portion (SEDAR 2025c). The most recent assessment was conducted in 2025, using data through 2023 (SEDAR 2025c). That assessment found biomass to be above biomass at MSY ($B/B_{MSY} \approx 1.5$) (SEDAR 2025c). A recent (data < 5 years old) stock assessment with a

finding that B > B_{MSY} allows for a score of “very low concern” (5).

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for blueline tilefish in the Gulf. Therefore, current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Low Concern

The 2025 assessment of the U.S. South Atlantic blueline tilefish stock found fishing mortality to be well below F_{MSY} ($F_{2021–23}/F_{MSY}$ = 0.28) (SEDAR 2025c). A recent (data < 10 years old) stock assessment with a finding that F < F_{MSY} allows for a score of “low concern” (5) for fishing mortality.

Gag *(Mycteroperca microlepis)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

High Concern

The most recent full stock assessment for gag grouper in the Gulf used data from 2019 (SEDAR 2021a). The assessment determined that the stock is overfished, with a biomass estimate roughly one-tenth of that at MSY (2,295 MT and 28,560 MT, respectively; B/B_{MSY} = 0.08) (NOAA 2025). As a result of the stock assessment findings, NOAA Fisheries implemented a Temporary Rule to reduce overfishing in 2023, and the GFMC approved a rebuilding plan in July 2023 that reduced the allowable catch (ACL) even further (SFSC 2023). An Interim Analysis in September 2023 showed continued declines in abundance (SFSC 2023), and the stock remains classified as “overfished” by NOAA

(NOAA 2025). A recent stock assessment with a finding that B < 50%B_{MSY} requires a score of “high concern” (1).

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

High Concern

Gag grouper in the South Atlantic was most recently assessed in 2021 as overfished, where SSB_{2019}/SSB_{MSY} = 0.15 (SEDAR 2021f; NOAA 2025). A recent stock assessment with a finding that B < 50%B_{MSY} requires a score of “high concern” (1).

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent stock assessment (2021) found the stock to be undergoing overfishing, with a fishing mortality rate roughly three times that of MSY (0.412 and 0.148, respectively; F/F_{MSY} = 2.8) ((SEDAR 2021a). Since then, fishing mortality has declined relative to the overfishing threshold, and the stock is no longer considered “subject to overfishing” (NOAA 2025). Thus, a score of “low concern” (5) is awarded.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

High Concern

According to the 2021 stock assessment and NOAA, gag grouper in the southeast Atlantic is undergoing overfishing (SEDAR 2021f; NMFS 2022d}. The stock assessment notes the current fishery status in the terminal year, where F is represented by the geometric mean from 2017 to 2019, and was estimated by the base run to be $F_{2017–19}/F_{MSY}$ = 2.15 (Figure 6), and the median value was $F_{2017–19}/F_{MSY}$ = 2.27. Of the ensemble model runs, 100% agreed with the base run that the stock is currently experiencing overfishing, and according to the assessment, the commercial handline fishery has been the largest contributor of fishing mortality in most years (SEDAR 2021f). But fishing mortality in the recreational sector continues to increase (see Figure 6) (SEDAR 2021f). Because the stock is undergoing overfishing, a score of “high concern” (1) is awarded.

Supplementary Information

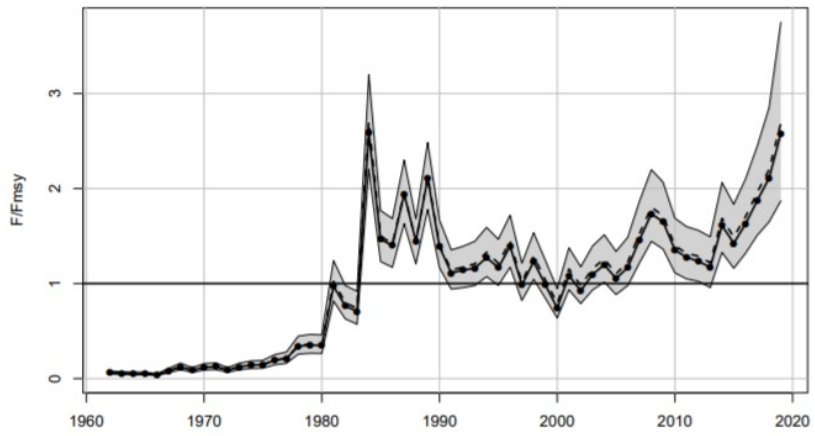


Figure 6: Fishing mortality for gag grouper, Western Central Atlantic (SEDAR 2021f).

Gray snapper *(Lutjanus griseus)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Very Low Concern

Gray snapper in the Gulf was last assessed using data from 2020 (SEDAR 2022c). Biomass at that time was considered to be above the MSY proxy ($SSB_{current}/SSB_{30\%SPR}$ = 1.6), and the stock is considered "not overfished" (SEDAR 2022c; NOAA 2025). A recent stock assessment with a finding that B > B_{MSY} allows for a score of "very low concern" (5).

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

No comprehensive stock assessments have been conducted on gray snapper in the U.S. South Atlantic. For management purposes, the species is grouped with Cubera snapper and lane snapper in the South Atlantic Snappers Complex. According to NOAA, the

"overfished" status for the complex is "unknown" (NOAA 2025). The IUCN has determined this species to be "Least Concern" in the Gulf of Mexico (Lindeman et al 2016o) and globally (Lindeman, K. et al 2016), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Lutjanus griseus* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for gray snapper in the Gulf/U.S. South Atlantic. Productivity data primarily from (Farmer et al 2016) and references therein, with average maximum size from (Allen 1985) as reported in FishBase.org.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	26 yrs
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	2	0.17
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	No data available, but assumed > 20,000 based on similar species (Lutjanids)
Average maximum size (cm)	< 100	100–300	> 300	1	89 cm TL

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average size at maturity (cm)	< 40	40–200	> 200	1	23 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.17**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases iis susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.035
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent stock assessment of gray snapper in the Gulf found the stock to be not undergoing overfishing ($F_{current}/F_{MSYproxy}$ = 0.659), and that the stock had not been

experiencing overfishing at any point in the time series (1945–2020) (SEDAR 2022c; NOAA 2025). A recent stock assessment with a finding that F < F_{MSY} allows for a score of "low concern" (5).

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for gray snapper in the U.S. South Atlantic. Therefore, current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Gray triggerfish *(Balistes capriscus)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

The most recent full stock assessment for gray triggerfish in the Gulf used data through 2013 (SEDAR 2015). At that time, biomass was estimated to be below B_{MSY} (B/B_{MSY} = 6.04/10.277 trillion eggs = 0.587) (SEDAR 2015). An update to the full stock assessment was never completed because of challenges with essential data inputs that could not be resolved within the allotted timeline (NOAA 2020b). An interim assessment was then conducted in 2020 (NOAA 2020b). This update extended data for a single abundance index (the "combined video index") through 2019 (Figure 7) (NOAA 2020b). That index suggests that relative abundance peaked in 2009 and has varied widely since, hitting near time-series lows in 2012 and 2018 before rebounding in 2019 (NOAA 2020b). The index spans from 1995 to 2019, which is greater than three generation times for this species [generation length is estimated at 6 years (Tyler and Munroe 2015)]. The "overfished" status is "not overfished—rebuilding" (NOAA 2025), which means that the stock is above the limit reference point and rebuilding toward the target reference point. A full stock assessment with data > 10 yrs old is too old to use for scoring a Seafood Watch assessment (Seafood Watch 2020); however, the interim update suggests that abundance is above the average for the time series, and NOAA considers the stock to be between the limit and target reference points, thus allowing for a score of "moderate concern" (2.33).

Supplementary Information

According to NOAA, the stock is on the "... second rebuilding plan. The first plan was implemented in 2008, and the stock was targeted to rebuild by 2013 (6-year plan). In 2012, the target rebuild date was extended to 2017, but the stock failed to rebuild. A new 9-year plan was approved in 2017, but was not implemented until 2018, with a target year of 2025 to rebuild, so it is regarded as an 8-year plan" {NOAA 2025).

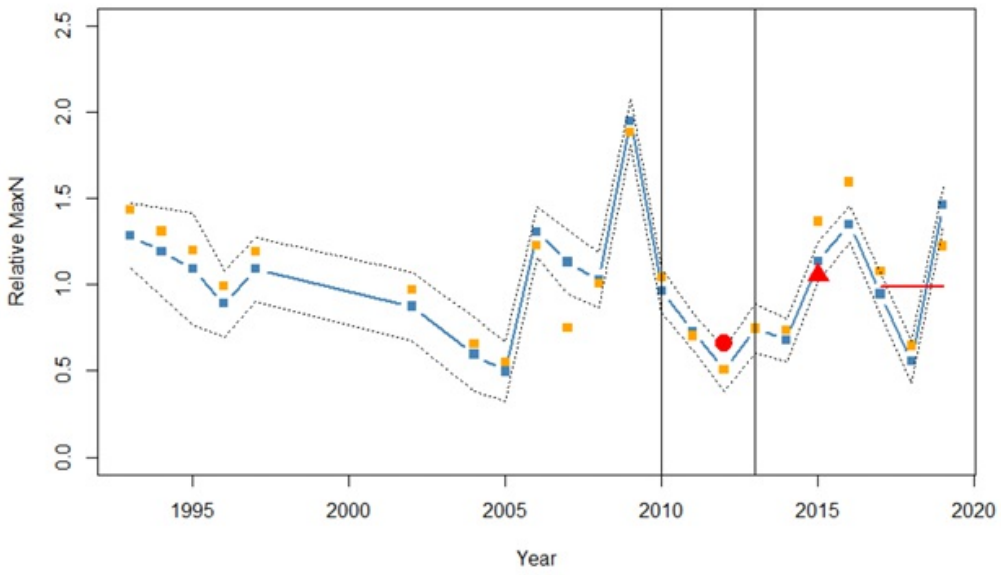


Figure 7: Combined video index for Gulf gray triggerfish updated through 2019. The figure depicts the nominal index (orange), the standardized index (blue), and the upper and lower confidence limits for the standardized index (dashed). The standard C_{ref} (2011–13 average) is highlighted by the red circle, the rebuilding C_{ref} (2014–16 average) is highlighted by the red triangle ,and the recent observed index (2017–19 average) is shown by the red horizontal line. Vertical lines depict the terminal data year of SEDAR 9 update (2010) and SEDAR 43 (2013). Chart and text from (NOAA 2020b).

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

The most recent stock assessment for gray triggerfish in the U.S. South Atlantic used data through 2021, and found the current stock status to be above the limit reference point (SSB_{2021}/MSST = 1.33), so the stock was not overfished (SEDAR 2024a). The limit reference point (MSST; minimum stock size threshold) is set at 50%B_{MSY} [p. 14 in (SEDAR 2024a)], so the current biomass appears to be around 67% of B_{MSY}. The current NOAA stock status ("overfished") determination is "unknown" (NOAA 2025). A stock assessment using data < 5 years old with a finding that biomass > 0.5B_{MSY} but < 0.75 B_{MSY} allows for a score of "moderate concern" (2.33).

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

The most recent full stock assessment for gray triggerfish in the Gulf found fishing mortality to be at a less than sustainable level (F_{2013}/F_{MSY} = 0.621) (SEDAR 2015). That assessment is too old to use for scoring (data are > 10 yrs old), but NOAA considers the fishery to still be "not subject to overfishing" (NOAA 2025) because mortality is considered to be below a level that would allow rebuilding (NOAA 2025b). For the purposes of this Seafood Watch assessment, fishing mortality relative to a sustainable level is considered unknown, so a score of "moderate concern" (3) is given.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

High Concern

Fishing mortality has generally been below the target reference throughout the time series (1980–2021)—exceeding it only in 2009 and 2010 and in the two most recent years, 2020 and 2021 ($F_{2019–21}/F_{40\%}$ = 1.16) (Figure 8) (SEDAR 2024a). There is also great uncertainty around the most recent estimates. Per the Seafood Watch Standard for Fisheries (Seafood Watch 2020): "if F is trending upwards and has just risen above F_{MSY} (or an appropriate reference point), fishing mortality should be rated as 'high concern' unless there is a substantial plan to bring F back down. Such a plan would need to differ substantially from the existing harvest control rules, as those evidently did not keep F at a sufficiently low level." Therefore, fishing mortality for gray triggerfish in the U.S. South Atlantic is considered a "high concern" until such measures are in place.

Supplementary Information

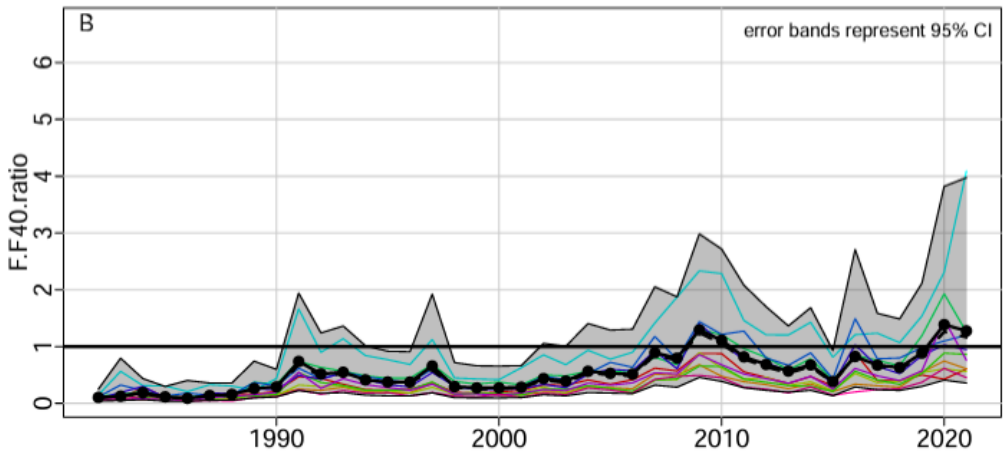


Figure 8: Estimated time series of F relative to $F_{40\%}$. Shaded region represents 95% confidence bands from the model runs (n = 1878). Chart and text from (SEDAR 2024a).

Greater amberjack *(Seriola dumerili)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

High Concern

Greater amberjack in the Gulf is considered overfished according to the most recent stock assessment because B_{2018}/B_{MSY} (2,433 MT/7,119 MT) = 0.34 (SEDAR 2020b). The stock is in its third rebuilding plan since 2003, having failed to rebuild in line with the first two (NOAA 2025). Because the stock is currently overfished, a score of "high concern" (1) is required.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Low Concern

According to NOAA, for greater amberjack in the western central Atlantic, B_{2017}/B_{MSY}

(6,913 MT/3,291 MT) = 2.10, so it is not considered overfished (NOAA 2025; NOAA 2021c; SEDAR 2020a). Because the data are through 2017 and > 5 years old (but less than 10), a score of "low concern" (3.67) is awarded.

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

According to the most recent stock assessment for greater amberjack in the Gulf, fishing mortality in 2018 exceeded F_{MSY} (0.302 exploitation rate and 0.175 exploitation rate, respectively), and the stock was considered to be undergoing overfishing (SEDAR 2020b; NOAA 2023b}. Since then, fishing mortality has declined relative the overfishing threshold, and the stock is no longer considered "subject to overfishing" (NOAA 2025). Therefore, a score of "low concern" (5) is awarded for fishing mortality.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Low Concern

According to the most recent stock assessment for greater amberjack in the southeast Atlantic, overfishing is not occurring because F/F_{MSY} (0.271/0.686) = 0.395 (NOAA 2021c; SEDAR 2020a; NOAA 2025). Therefore, a score of "low concern" (5) is awarded for fishing mortality.

Hogfish *(Lachnolaimus maximus)*

1.1 Abundance

Eastern Gulf of America/West Florida Stock - Diving - GFMC

Low Concern

Hogfish is treated as three separate stocks in US waters: eastern Gulf of Mexico/Western Florida, the Florida Keys including the Dry Tortugas and Eastern Florida, and Georgia through North Carolina (Figure 9) (Cooper et al. 2014). The eastern Gulf stock was last

assessed using data from 2016 (SEDAR 37 (Addis et al 2018)). The assessment considered the stock not overfished relative to MSY (B_{2016}/B_{MSY} = 1,763 MT/747 MT = 2.36) or the 30% SPR reference point. Uncertainty is relatively high, but the lower 95%CI is not below B_{MSY}. A B/B_{MSY} ratio of greater than 1 would allow for a score of "very low concern" (5), but the age of the data (> 5 years) moderates that score down to "low concern" (3.67).

Supplementary Information

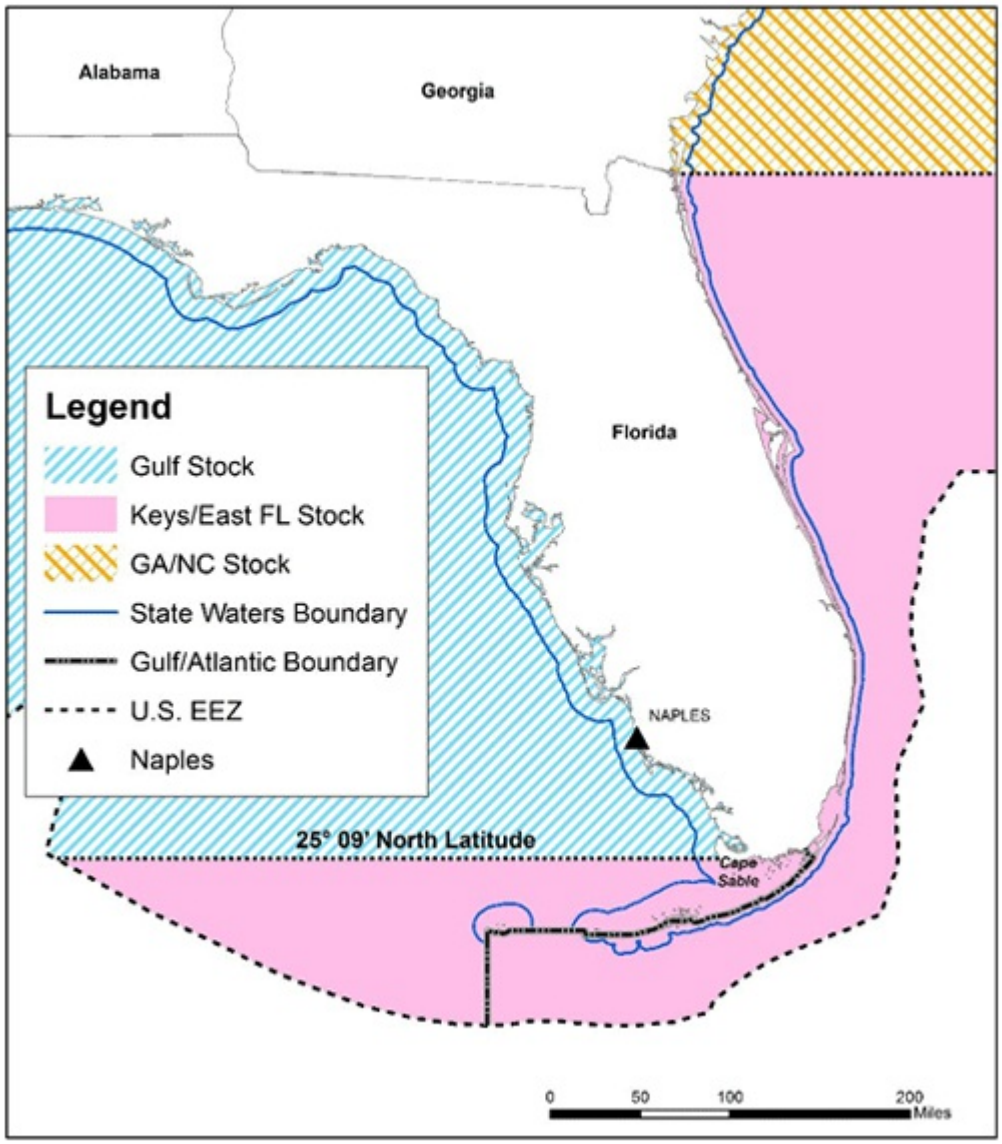


Figure 9: Hogfish stock boundaries in the eastern U.S. based on genetic analyses by Seyoum et al. (2014) (as reported by (Addis et al 2018).

Florida Keys/East Florida Stock - Diving

Florida Keys/East Florida Stock - Vertical lines

High Concern

A stock assessment of the U.S. South Atlantic hogfish stocks was conducted in 2013 using data through 2012 (Cooper et al. 2014). That assessment found the Florida Keys stock to be overfished (B/B_{MSY} = 399.287/1,043.44 = 0.38) (Cooper et al. 2014). Although that assessment is too old (data > 10 yrs old) to use for scoring, NOAA still considers the stock "overfished" (NOAA 2025), which requires a score of "high concern" (1).

Supplementary Information

A benchmark stock assessment of the Gulf and East Florida/Florida Keys hogfish stocks is currently underway, with a planned timeframe of review in summer 2026: https://sedarweb.org/assessments/sedar-94-florida-hogfish/.

Georgia through North Carolina (GA/NC) Stock - Diving

Georgia through North Carolina (GA/NC) Stock - Vertical lines

Moderate Concern

A stock assessment of the U.S. South Atlantic stocks was conducted in 2013 using data through 2012, but did not yield biomass estimates for the Carolinas stock (Cooper et al. 2014). NOAA has the "overfished" status for the stock as "unknown" (NOAA 2025). The species is considered "Vulnerable" by the IUCN, both globally (Choat et al. 2010) and in the Gulf of Mexico (Rocha and McEachran 2015), but those assessments are too old to use for scoring. In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Lachnolaimus maximus* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for hogfish in the Southeast Atlantic (Carolinas). The main sources for the life history values are (Robins and Ray 1986) and (Cooper et al. 2014) and references therein [fecundity estimate from figure 5.6.4.1 in (Cooper et al. 2014)]. Note that hogfish in the Carolinas and Eastern Gulf stocks tend to grow larger and older and are more fecund than those in the Florida Keys stocks, suggesting growth overfishing in the latter (Cooper et al. 2014). The life history values in this PSA are based on the less-exploited stocks where available.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	2	7.7 yrs male
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	23 yrs
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.08
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	> 20,000 except in very small individuals
Average maximum size (cm)	< 100	100–300	> 300	1	91 cm
Average size at maturity (cm)	< 40	40–200	> 200	1	18 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.5**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	(GMFMC 2019)
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	(GMFMC 2019)
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	(GMFMC 2019)
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	(GMFMC 2019)
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	(GMFMC 2019)
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.176
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Eastern Gulf of America/West Florida Stock - Diving - GFMC

Low Concern

The most recent stock assessment for the eastern Gulf/western Florida stock of hogfish found the stock to be not subject to overfishing (F_{2016}/F_{MSY} = 0.049/0.096; annual exploitation rate = 0.51), which allows for a score of “low concern” (5).

Florida Keys/East Florida Stock - Diving

Florida Keys/East Florida Stock - Vertical lines

Low Concern

According to the 2014 stock assessment, the East Florida/Florida Keys stock of hogfish was subject to overfishing (F_{2012}/F_{MSY} = 1.6) (Cooper et al. 2014). The stock was put on a rebuilding plan, and mortality (including estimated discards) has decreased to less than 20% of F_{MSY} in recent years (see Justification), which is considered very low relative to a sustainable level and therefore meets the requirement for a score of “low concern” (5).

Supplementary Information

The East Florida/Florida Keys stock of hogfish is in year 8 of a 10-year rebuilding plan (NOAA 2025), and a new stock assessment is currently in progress with a planned completion of the second half of 2026 https://sedarweb.org/assessments/sedar-94-florida-hogfish/. The rebuilding plan set the overfishing limit (OFL) at the yield at F_{MSY}, and the allowable biological catch (ABC) at approximately 50% of the OFL in 2017, increasing to 66% in 2027 (Action 5-Pref Alt 3 in https://safmc.net/documents/snapper-grouper-amendment-37/ PDF p. 46). The annual catch limit (ACL) was set at 95% of the ABC (Action 6 PDF p. 50). The commercial catch relative to the commercial ACL was 37.1% in 2022, 24.8% in 2023, and 20.5% in 2024 (https://www.fisheries.noaa.gov/southeast/commercial-fishing/2024-preliminary-south-atlantic-commercial-landings). The recreational catch relative to the recreational ACL is presented in terms of numbers rather than pounds: 20% in 2022, 12% in 2023, and 11% in 2024 (https://www.fisheries.noaa.gov/recreational-fishing-data/2024-and-2023-2024-south-atlantic-recreational-landings). The discard mortality is considered to be relatively minor compared to landings (see Action 5-Pref Alt 3 in https://safmc.net/documents/snapper-grouper-amendment-37/ PDF p. 46).

Georgia through North Carolina (GA/NC) Stock - Diving

Georgia through North Carolina (GA/NC) Stock - Vertical lines

Moderate Concern

According to the most recent stock assessment report for hogfish along the southeast Atlantic coast, there are no estimates for fishing mortality (Cooper et al. 2014; NOAA 2021e; NOAA 2023b}. Because F is unknown, a score of “moderate concern” (3) is awarded.

Jolthead porgy *(Calamus bajonado)*

1.1 Abundance

Set longlines - GFMC

Moderate Concern

No comprehensive stock assessments have been conducted on jolthead porgy in the Gulf. It is not included in any management plan in the Gulf of Mexico. The species is considered “Least Concern” by the IUCN in the Gulf (Carpenter and Vega-Cendejas 2015) and globally (Russell et al 2014b), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being

overfished. The PSA for jolthead porgy suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for jolthead porgy in the Gulf/Southeast Atlantic. Most life history values from {Burton et al. 2017} and {Druzhinin, A.D., 1976} as reported in FishBase.org.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	4-5 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A as max size is scored	
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.14
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	2	based on knobbed porgy
Average maximum size (cm)	< 100	100–300	> 300	1	76 cm fork length, 85 cm total length
Average size at maturity (cm)	< 40	40–200	> 200	1	28 cm

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.5**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.176
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Set longlines - GFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for jolthead porgy in the Gulf. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Knobbed porgy *(Calamus nodosus)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on knobbed porgy in the U.S. South Atlantic. For management purposes, the stock is grouped with jolthead porgy, saucereye porgy, scup, and whitebone porgy in the South Atlantic Porgy Complex. According to NOAA, the “overfished” status for the complex is “unknown” (NOAA 2025). The IUCN has determined this species to be of “Least Concern” in both the Gulf

(Carpenter and Vega-Cendejas 2015a) and globally (Carpenter et al 2014a), but these assessments are too old to use for scoring (data > 10 yrs old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Calamus nodosus* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for knobbed porgy in the Gulf/Southeast Atlantic. Most life history values from (Druzhinin, A.D. 1976) and (Horvath, M.L. et al. 1990) as reported in FishBase.org.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	3 yrs (Druzhinin, A.D. 1976)
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A as max. size is scored	
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	2	0.17 (Horvath, M.L. et al. 1990)
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	2	
Average maximum size (cm)	< 100	100–300	> 300	1	54 cm (Druzhinin, A.D. 1976; Horvath, M.L. et al. 1990)

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average size at maturity (cm)	< 40	40–200	> 200		
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.4**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.13
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for knobbed porgy in the U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Lane snapper *(Lutjanus synagris)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

No comprehensive stock assessments have been conducted on lane snapper in the U.S. Gulf. According to NOAA, the “overfished” status for the stock is “unknown” (NOAA 2025). There is a data-limited stock assessment for the stock (SEDAR 2016c), most recently updated with headboat (both commercial and recreational) data through 2022 (Figure 10) (Cummings 2020; GMFMC SSC 2023; GMFMC SSC 2023b). A time series that covers more than three generations for this stock (see Justification) and suggests an increasing or stable trend in abundance allows for a score of “low concern” (3.67).

Supplementary Information

The Seafood Watch Standard for Fisheries (Seafood Watch 2020) allows for scoring of abundance based on data-limited approaches where there is no recent stock assessment. For a species to score "low concern" (3.67), an index must show a stable or increasing trend over three generations. Generation time in an unfished population is calculated using the same methods as IUCN assessments, and is obtained from IUCN assessments where available. If unavailable, it is calculated thus:

$$G = A + 1/M$$

where A is the age at 50% maturity and M is the natural mortality rate (IUCN 2022). For lane snapper, the IUCN calculated a three-generation generation time of 15–18 years (Lindeman et al 2016d).

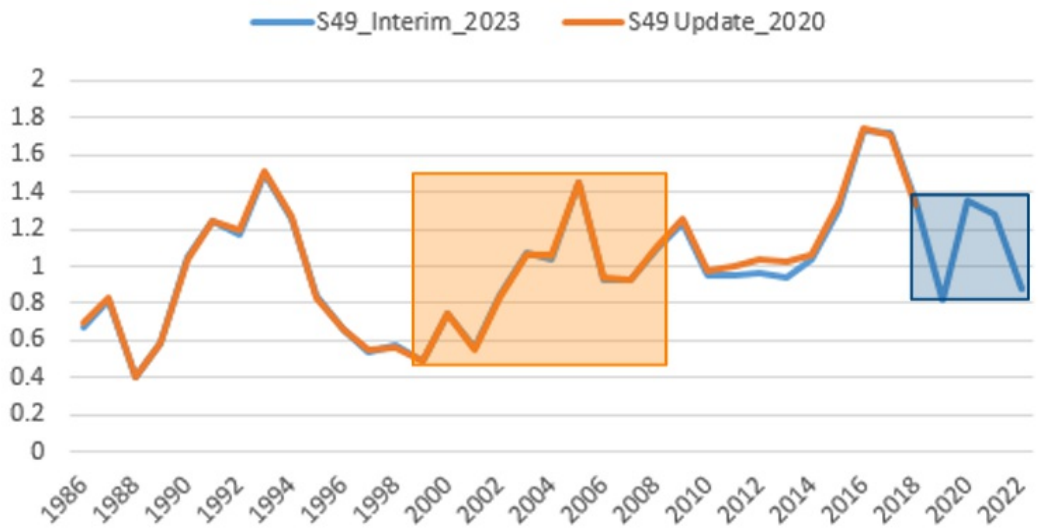


Figure 10: Gulf lane snapper CPUE index from headboat survey. S49 refers to the original data-limited assessment for lane snapper and a number of other stocks (SEDAR 49). Chart from the most recent CPUE index update (GMFMC SSC 2023).

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

There is no stock assessment of lane snapper in the U.S. South Atlantic. For management purposes, the stock is grouped with Cubera snapper and gray snapper in the South Atlantic Snappers Complex, with an "overfished" status of "unknown" (NOAA 2025). Two IUCN assessments are available: one with a global scope (Lindeman et al 2016d) and the other specific to the Gulf (Lindeman et al 2016e). Both are considered "Near Threatened"; however, both are based on information > 10 yrs old, so they cannot be used for scoring. In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Lutjanus synagris* suggests a moderate vulnerability, allowing for a score of "moderate

concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for lane snapper in the Southeast Atlantic. Most life history values are from the data-limited stock assessment for Gulf lane snapper (SEDAR 2016c) and references therein, with fecundity estimates from FishBase.org.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2–3 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	Not included in the calculation as max. size is available, but estimates at 17–19 yrs in SEDAR 49
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	2	0.17 ± 0.03 SE
Fecundity (eggs/yr)	> 0,000	100–20,000	< 100	1	range 29 to 1,237 thousand eggs reported in FishBase
Average maximum size (cm)	< 100	100–300	> 300	1	45 cm fork length (FL)
Average size at maturity (cm)	< 40	40–200	> 200	1	24–27 cm FL
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.17**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.035
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

High Concern

According to NOAA, lane snapper in the Gulf has been subject to overfishing since the end of 2023 (NOAA 2025).

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for lane snapper in the Gulf of Mexico or U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Lesser amberjack *(Seriola fasciata)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on lesser amberjack in the U.S. South Atlantic or Gulf. According to a data-limited assessment including lesser amberjack in the Gulf, there is no information regarding stock structure for the species, and no biomass/abundance reference points have been determined by managers (SEDAR 2016c). For management purposes, the stock is grouped with almaco jack and banded rudderfish in the Gulf of Mexico Jacks Complex and the South Atlantic Jacks Complex. According to NOAA, the "overfished" status for both complexes is "unknown" (NOAA 2025). The species is considered "Least Concern" by the IUCN in the Gulf (Smith-Vaniz et al 2015e) and globally (Smith-Vaniz et al 2015f), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an

indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Seriola fasciata* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for lesser amberjack in the Gulf/Southeast Atlantic. Data primarily from (Galbraith et al. 2022) and (Farmer et al 2016) and references therein.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2.25 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	10.2 yrs
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	1	0.28
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	No data available on this species, but assumed over 20,000 based on other *Seriola* spp.
Average maximum size (cm)	< 100	100–300	> 300	1	76 cm FL
Average size at maturity (cm)	< 40	40–200	> 200	1	37.9 cm FL

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.00**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	2.973
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for lesser amberjack in the U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Mutton snapper *(Lutjanus analis)*

1.1 Abundance

Southern Atlantic Coast/Gulf of America Stock - Diving

Southern Atlantic Coast/Gulf of America Stock - Set longlines

Southern Atlantic Coast/Gulf of America Stock - Vertical lines

Very Low Concern

Mutton snapper is assessed as a single stock in the Gulf and South Atlantic. The most recent stock assessment used data through 2023, and found the spawning stock biomass

to exceed that at MSY ($SSB_{2021–23}/SSB_{MSY}$ = 1.16) (SEDAR 2024b). A stock assessment using data < 5 years old with a finding that B/B_{MSY} is > 1 allows for a score of "very low concern" (5).

1.2 Fishing Mortality

Southern Atlantic Coast/Gulf of America Stock - Diving

Southern Atlantic Coast/Gulf of America Stock - Set longlines

Southern Atlantic Coast/Gulf of America Stock - Vertical lines

Low Concern

According to the most recent stock assessment update for mutton snapper in the Gulf and southeast Atlantic, fishing mortality is less than that at MSY ($F_{2021–23}/F_{30\%SPR}$ = 0.53) (SEDAR 2024b). A stock assessment using data < 10 years old with a finding that $F < F_{MSY}$ allows for a score of "low concern" (5) for fishing mortality.

Queen snapper *(Etelis oculatus)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on queen snapper in the U.S. South Atlantic or Gulf. For management purposes, the species is grouped with blackfin snapper, misty grouper, yellowedge grouper, sand tilefish, and silk snapper in the South Atlantic Deepwater Snapper-Grouper Complex and with blackfin snapper, silk snapper, and wenchman in the Gulf of America Mid-Water Snapper Complex. According to NOAA, the "overfished" status for both complexes is "unknown" (NOAA 2025). The IUCN has determined this species to be of "Least Concern" in the Gulf (Claro et al 2016) and "Data Deficient" globally (Lindeman et al 2016n). Based on the IUCN "Least Concern" designation in the Gulf, abundance is scored a "moderate concern" (2.33).

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for queen snapper in the Gulf or U.S. South Atlantic. Therefore, the current fishing mortality

relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Queen triggerfish *(Balistes vetula)*

1.1 Abundance

Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on queen triggerfish in the U.S. South Atlantic or Gulf. For management purposes, the species is grouped with blackfin snapper, misty grouper, yellowedge grouper, sand tilefish, and silk snapper in the South Atlantic Deepwater Snapper-Grouper Complex and with blackfin snapper, silk snapper, and wenchman in the Gulf of America Mid-Water Snapper Complex. NOAA considers the stock status “unknown” for both complexes (NOAA 2025). The IUCN has determined this species to be of “Least Concern” in the Gulf (Tyler et al 2015) and “Near Threatened” globally (Liu et al 2015b), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Balistes vetula* suggests a moderate vulnerability (see Justification), allowing for a score of “moderate concern” (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for queen triggerfish. Life history data for mainland U.S. waters are limited, so most data points are from a study of the species in the U.S. Caribbean [(Rivera Hernández and Shervette 2024) and references therein].

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	2.7–4.1 yrs

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A as max. size is scored	
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	2	0.15
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100		
Average maximum size (cm)	< 100	100–300	> 300	1	43–59 cm
Average size at maturity (cm)	< 40	40–200	> 200	1	19–23 cm FL
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	2	Nesting benthic spawner
Productivity score (mean of attribute scores)				**1.4**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.13
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

1.2 Fishing Mortality

Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for queen triggerfish in the Gulf or U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Red grouper *(Epinephelus morio)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Very Low Concern

The most recent full stock assessment for red grouper in the Gulf used data from 2022, and determined the spawning stock biomass to be above the biomass at MSY ($SSB_{2022}/SSB_{MSY} = 1.05$) (SEDAR 2025b). A stock assessment using data < 5 years old with a finding that B/B_{MSY} is > 1 allows for a score of "very low concern" (5).

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

High Concern

The most recent stock assessment for South Atlantic red grouper used data from 2015, and determined the biomass to be less than one-third of the biomass at MSY (B/B_{MSY} = 911 MT/3,183 MT = 0.29) (SEDAR 2017b). The stock is also in year 11 of a 10-year

rebuilding plan (NOAA 2025) (meaning that the goal date has passed, though rebuilding measures from that plan remain in place until a new plan is implemented). The stock is considered overfished (NOAA 2025), so it receives a score of “high concern” (1).

Supplementary Information

According to NOAA (NOAA 2025), red grouper in the South Atlantic is in year 5 of a 9-year rebuilding plan. This “... is the second rebuilding plan. The first rebuilding plan was implemented in 2012 and the stock was targeted to rebuild by 2020, but wasn't making adequate progress in rebuilding, so a new 10-year plan was implemented in 2020” (NOAA 2025).

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent full stock assessment of Gulf red grouper determined fishing mortality to be below the fishing mortality at MSY ($F_{2020–22}/F_{MSY}$ = 0.65) (SEDAR 2025b). A stock assessment using data < 10 years old with a finding that F < F_{MSY} allows for a score of “low concern” (5) for fishing mortality.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

According to the most recent stock assessment for South Atlantic red grouper, which used data through 2015, the stock was at that time currently undergoing overfishing; F/F_{MSY} (0.18/0.12) = 1.5 (SEDAR 2017b). But the Q4 2022 FSSI update has the stock status as “not subject to overfishing” (NOAA 2025), a determination made when fishing mortality is below a target level (that in this case would allow the stock to rebuild). Until an updated stock assessment can confirm that overfishing is no longer occurring, a score of “moderate concern” (3) is awarded.

Red porgy *(Pagrus pagrus)*

1.1 Abundance

Set longlines

Vertical lines

Moderate Concern

Red porgy has not been assessed in the Gulf, so abundance relative to a sustainable level is unknown. Fishery impacts on the species in the Gulf are not actively managed by GFMC or NOAA (red porgy is not included in the Gulf of America Reef Fish Fishery Management Plan), and there is no NOAA stock status determination (NOAA 2025). The IUCN has determined this species to be of "Least Concern" in both the Gulf and globally (Russell, B. et al 2014), but this assessment is too old to use for scoring (data > 10 yrs old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Pagrus pagrus* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for red porgy. Most life history values are from (Hood and Johnson 2000), with fecundity estimate from (Klibansky and Scharf 2013).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	< 4 yrs
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A as max. size is scored	17 yrs

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	1	0.11
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	Millions of eggs
Average maximum size (cm)	< 100	100–300	> 300	1	459 mm
Average size at maturity (cm)	< 40	40–200	> 200	1	< 225 mm
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.0**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	2.973
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Medium

Southern Atlantic Coast Stock - Vertical lines - SAFMC

High Concern

According to the most recent stock assessment and NOAA, red porgy is overfished in the southeast Atlantic; B/B_{MSY} = 0.27 (SEDAR 2020d; NOAA 2025). The stock failed to rebuild

according to the original 19-year rebuilding plan, and it is currently in year 3 of the new 26-year rebuilding plan (NOAA 2025). Therefore, a score of “high concern” (1) is required.

1.2 Fishing Mortality

Set longlines

Vertical lines

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for red porgy in the Gulf. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

According to the most recent stock assessment of red porgy in the South Atlantic, $F_{2015-17}/F_{MSY}$ = 1.73 (SEDAR 2020d), indicating that the stock was subject to overfishing at that time. NOAA recently (in the Q2 2023 FSSI update) changed the stock status from “subject to overfishing” to “not subject to overfishing” (NOAA 2025)—a determination that is made when fishing mortality is below a target level (that in this case would allow the stock to rebuild). Until an updated stock assessment can confirm that overfishing is no longer occurring, a score of “moderate concern” (3) is awarded.

Red snapper *(Lutjanus campechanus)*

1.1 Abundance

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Moderate Concern

According to the most recent stock assessment for red snapper in the Gulf, which uses data through 2017, the stock is not overfished because $SSB_{2016}/MSST_{NEW}$ = 1.41 (SEDAR 2018). A stock assessment update provided no update to the stock status determination (it is a Research Track assessment), but it does suggest that abundance increased through 2019 (SEDAR 2024). An updated stock assessment is currently underway (SEDAR 98). For now, NOAA considers the stock “not overfished—rebuilding,” with B/B_{MSY} = 0.70 based on

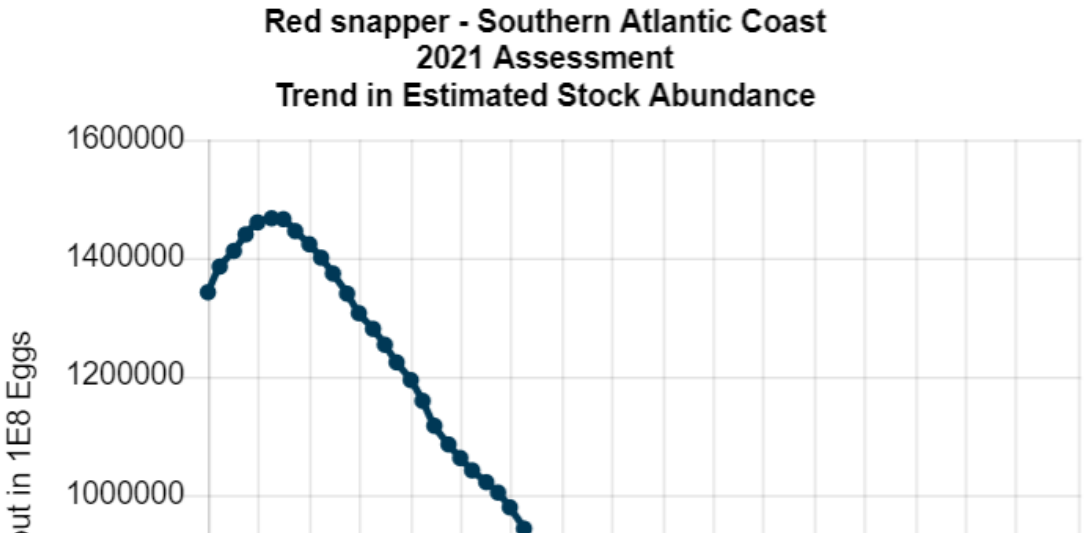
the 2017 data (NOAA 2025). A stock assessment using data < 10 years old with a finding that B/B_{MSY} > 0.5 but < 0.75 requires a score of “moderate concern” (2.33).

Southern Atlantic Coast Stock - Vertical lines - SAFMC

High Concern

The most recent full stock assessment for red snapper in the South Atlantic used data through 2019, and determined the biomass to be less than the biomass at MSY (B/B_{MSY} = 0.44) (Figure 11) (SEDAR 2021). The stock is considered overfished (NOAA 2025). The combination of a stock assessment using data > 5 but < 10 years old with a finding that B/B_{MSY} is < 0.5 requires a score of “high concern” (1).

Supplementary Information



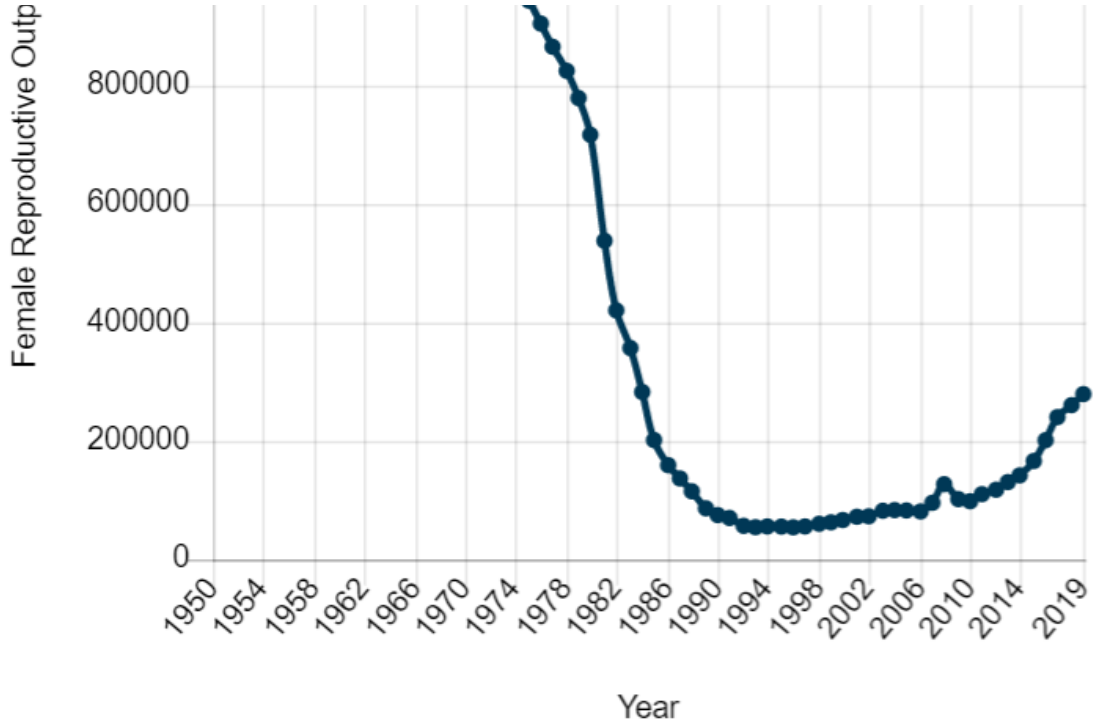


Figure 11: Abundance of red snapper in the Southeast Atlantic (SEDAR 2021).

1.2 Fishing Mortality

Gulf of America Stock - Diving

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

According to the most recent stock assessment for red snapper in the Gulf, overfishing is not occurring ($F_{CURRENT}$/MFMT = 0.823) (SEDAR 2018) (NOAA 2025). A score of "low concern" (5) is awarded.

Southern Atlantic Coast Stock - Vertical lines - SAFMC

High Concern

According to the latest stock status report and most recent stock assessment, red snapper in the southeast Atlantic is undergoing overfishing because F/F_{MSY} (0.452/0.206) = 2.19 (SEDAR 2021; NOAA 2025). A score of "high concern" (1) is awarded.

Scamp *(Mycteroperca phenax)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Very Low Concern

Because scamp (*Mycteroperca phenax*) and yellowmouth grouper (*Mycteroperca interstitialis*) are difficult to distinguish from each other, the pair was assessed as a single complex in the most recent stock assessment in the Gulf. The assessment used data through 2020 and determined biomass to be above the spawning biomass at MSY ($SSB/SSB_{MSYproxy(30\%SPR)} = 1.62$) (SEDAR 2022b). The GFMC Science and Statistical Committee has recommended that an F_{MSY} proxy of F40%SPR is more appropriate for scamp than the F30%SPR currently used (GMFMC SSC 2022)—biomass in 2020 was also above the B_{MSY} threshold derived from this reference point. Status determination criteria have not been defined for the stock complex; i.e., stock status is considered "unknown" by NOAA (NOAA 2025). A recent stock assessment (data < 5 years old) with a finding that biomass is above an appropriate limit reference point allows for a score of "very low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the Gulf.

Southern Atlantic Coast Stock - Vertical lines - SAFMC

High Concern

Because scamp (*Mycteroperca phenax*) and yellowmouth grouper (*Mycteroperca interstitialis*) are difficult to distinguish from each other, the pair was assessed as a single complex in the most recent stock assessment in the South Atlantic. The assessment used data through 2021, and found biomass at that time to be below the limit reference point ($SSB_{2021}/75\%SSB_{F40\%} = 0.27$) (SEDAR 2022d). Status determination criteria have not been defined for the stock complex; i.e., stock status is considered "unknown" by NOAA (NOAA 2025). A recent stock assessment (data < 5 years old) with a finding that biomass is below an appropriate limit reference point requires a score of "high concern" (1). This finding is applied to both scamp and yellowmouth grouper.

Supplementary Information

According to NOAA, the stock assessment "... supports a conclusion that scamp and yellowmouth grouper (scamp/yellowmouth grouper complex) is not subject to overfishing and overfished. An official stock status determination cannot be made until the fishery management plan is amended to adopt new criteria for this new stock complex. A formal status determination is expected in 2025" (NOAA 2025).

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent stock assessment of the Gulf scamp and yellowmouth grouper complex suggests that the complex is not undergoing overfishing ($F_{2020}/F_{MSYproxy(30\%SPR)} = 0.54$), and that the stock had not been experiencing overfishing at any point in the time series (1986–2020) (SEDAR 2022b). The GFMC Science and Statistical Committee has recommended that an F_{MSY} proxy of $F_{40\%SPR}$ is more appropriate for scamp/yellowmouth grouper that the $F_{30\%SPR}$ currently used (GMFMC SSC 2022), but found that fishing mortality is also below this threshold (GMFMC SSC 2022). A recent stock assessment with a finding that $F < F_{MSY}$ allows for a score of "low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the Gulf.

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Low Concern

The most recent stock assessment of the South Atlantic scamp and yellowmouth grouper complex suggests that fishing mortality is below the F_{MSY} proxy ($F_{2019–21}/F_{40\%} = 0.81–0.91$, depending on model) (SEDAR 2022d). A recent stock assessment with a finding that $F < F_{MSY}$ allows for a score of "low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the South Atlantic.

Silk snapper *(Lutjanus vivanus)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

No comprehensive stock assessments have been conducted on silk snapper in the U.S. South Atlantic or Gulf. For management purposes, the species is grouped with blackfin snapper, misty grouper, yellowedge grouper, queen snapper, and sand tilefish in the South Atlantic Deepwater Snapper-Grouper Complex and with blackfin snapper, queen snapper, and wenchman in the Gulf of America Mid-Water Snapper Complex. According to NOAA, the "overfished" status for both complexes is "unknown" (NOAA 2025). The IUCN has determined this species to be of "Least Concern" in the Gulf (Lindeman et al

2016f) and globally (Lindeman, K. et al 2016c), but these assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Lutjanus vivanus* suggests a moderate vulnerability (see Justification), allowing for a score of "moderate concern" (2.33) for abundance.

Supplementary Information

Productivity-susceptibility analysis for silk snapper in the Gulf. Most life history values are from (Farmer et al 2016), with average maximum size from (IGFA 2001).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1.5	63 mo
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	29 years
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.10
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	No data available, but assumed > 20,000 based on similar species (Lutjanids)
Average maximum size (cm)	< 100	100–300	> 300	1	83 cm
Average size at maturity (cm)	< 40	40–200	> 200	1.5	43 cm

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.5**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.176
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	Moderate

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for silk snapper in the Gulf or U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Snowy grouper *(Epinephelus niveatus)*

1.1 Abundance

Gulf of America Stock - Set longlines - GFMC

High Concern

A 2016 stock assessment for snowy grouper in the Gulf was conducted using data-limited methods, with data through 2014, and peer reviewed through the SEDAR process (SEDAR

2016c). Only one of three candidate models met the performance criteria (e.g., model convergence) for all the methods evaluated. This model, which uses a short time series of data (2010 to 2014), indicated that the biomass in recent years was below threshold levels and that fishing mortality exceeded a sustainable level; however, the time series was considered too short to provide reliable management advice (SEDAR 2016c). A similar model run with a longer time series of data (1990 to 2014) provided similar results for the stock status, but did not meet all the performance criteria (SEDAR 2016c). Furthermore, no index of abundance is available for this species as a result of recent changes in the fishery distribution (SEDAR 2016c). Because this study used data that are now > 10 years old, it cannot be used for scoring in this Seafood Watch assessment. The IUCN has determined snowy grouper in the Gulf of Mexico to be "Least Concern" in the Gulf (Claro et al 2015) and "Vulnerable" globally (Bertoncini et al. 2018), but both assessments are too old to use for scoring (data are > 10 years old). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Epinephelus niveatus* suggests a high vulnerability (see Justification), allowing for a score of "high concern" (1) for abundance.

Supplementary Information

Productivity-susceptibility analysis for snowy grouper.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	2	Between 5 and 15 years [based on an estimate that 57% of females were mature at 6 years old in a study in (SEDAR 2016c)]
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	Not included in the calculation as max. size is available, but estimated at 35 yrs in (SEDAR 2021c) and as much as 80 yrs in (SEDAR 2016c)
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.094 ± 0.021 SE (SEDAR 2016c) and references therein

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	More than 2 million eggs (species account at SAFMC.net)
Average maximum size (cm)	< 100	100–300	> 300	2	114–120 cm based on (Wyanski et al. 2000) (Craig et al. 2011)
Average size at maturity (cm)	< 40	40–200	> 200	2	60 cm TL (50% maturity) (SEDAR 2016c) and references therein
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Groupers (family Epinephelidae) are pelagic spawners (Orth 2023) Chapter 13
Productivity score (mean of attribute scores)				**1.83**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.345
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	High

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

High Concern

According to the 2021 stock assessment update, which used data through 2018, snowy grouper in the southeast Atlantic is considered overfished (B/B_{MSY} = 690.266 MT/1,908 MT = 0.36) (SEDAR 2021c). The stock is in year 17 of a 34-year rebuilding plan (SEDAR 2021c; NOAA 2025). Thus, abundance is scored a "high concern" (1).

1.2 Fishing Mortality

Gulf of America Stock - Set longlines - GFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for snowy grouper in the Gulf. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

High Concern

According to the 2021 stock assessment update of South Atlantic snowy grouper, which used data through 2018, overfishing is occurring and the stock has not yet recovered to its biomass target. The terminal estimate, which is based on a 3-year geometric mean, is above F_{MSY} in the case of the base run ($F_{2016–18}/F_{MSY} = 1.13$) and the median ($F_{2016–18}/F_{MSY} = 1.08$) (SEDAR 2021c). Of all MCB runs, 82% were in qualitative agreement that the stock has not yet recovered ($SSB_{2018}/SSB_{MSY} < 1.0$) and 55% that the stock is experiencing overfishing ($F_{2016–18}/F_{MSY} > 1.0$) (SEDAR 2021c). The most recent stock status update from NMFS also notes that the stock is experiencing overfishing (NOAA 2025). Therefore, a score of “high concern” (1) is awarded.

Speckled hind *(Epinephelus drummondhayi)*

1.1 Abundance

Gulf of America Stock - Set longlines - GFMC

High Concern

A 2016 data-limited stock assessment for speckled hind in the Gulf was conducted and peer reviewed through SEDAR 49 (SEDAR 2016c). Only catch data are available for the stock, limiting the assessment to three catch-based models. One of these models did not meet specified performance criteria within the management strategy evaluation, and another is not suitable for providing management advice because it does not take into account historic harvest levels (SEDAR 2016c). The remaining method indicates that there is a greater than 50% probability that stock biomass is below 50% of B_{MSY} (SEDAR 2016c). The GFMC commonly sets biomass thresholds at 75% of B_{MSY} (or its proxy). The peer review concluded that data limitations prevented development of reference points for speckled hind (SEDAR 2016c), assuming similar reference point criteria as used for

other species, but suggests that there is an overwhelming probability that stock biomass is below a biomass threshold. The study is too old to use for scoring, in any case.

Speckled hind has also been identified as a "Species of Concern" under the U.S. Endangered Species Act (ESA), indicating that there is concern regarding its status but insufficient data to inform a formal determination (NMFS 2017a). The IUCN status for this species was "Critically Endangered" in 2013, but has more recently been changed to "Least Concern" in the Gulf {Carpenter et al. 2015} and "Data Deficient" globally (Sosa-Cordero and Russell 2018). Both assessments are too old to use for scoring (data are > 10 years old) (and, a finding of "Data Deficient" is not enough to use in scoring).

In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Epinephelus drummondhayi* suggests a high vulnerability (see Justification), allowing for a score of "high concern" (1) for abundance.

Supplementary Information

Productivity-susceptibility analysis for speckled hind. Data from SEDAR 49 and references therein (SEDAR 2016c).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	2	6.6 years
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	Not used as maximum size is available, but is likely 35–45 years
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.12 ± 0.02

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	Data not available, but assumed to be > 20,000 eggs based on similar species (e.g., red hind: https://safmc.net/species/grouper-red-hind/)
Average maximum size (cm)	< 100	100–300	> 300	1	88 cm TL ± 7 cm SE
Average size at maturity (cm)	< 40	40–200	> 200		53 cm TL (age at 50% maturity)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Groupers (family Epinephelidae) are pelagic spawners (Orth 2023) Chapter 13
Productivity score (mean of attribute scores)				**1.6**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.225
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	High

1.2 Fishing Mortality

Gulf of America Stock - Set longlines - GFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for speckled hind in the Gulf or U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Vermilion snapper *(Rhomboplites aurorubens)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent stock assessment for vermilion snapper in the Gulf used data through 2017 and found biomass at that time to be above B_{MSY} (B/B_{MSY} = 1.75) (SEDAR 2020e). The stock is considered “not overfished” (NOAA 2025). A more recent “Interim Analysis” provides relative abundance data through 2022 based on video surveys (“G-FISHER”), which suggests a flat trend in abundance, albeit with wide fluctuations (SFSC 2023b; GMFMC SSC 2023b). A stock assessment based on data that are > 5 years old but < 10 years old that finds current biomass exceeding B_{MSY} allows for a score of “low concern” (3.67).

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Low Concern

The most recent stock assessment for vermilion snapper in the Southeast Atlantic used data through 2016 and found biomass to be above B_{MSY} (B/B_{MSY} measured in billions of eggs is 20.7/18.3 = 1.13) (SEDAR 2018b). The stock is considered “not overfished” by NOAA (NOAA 2025). A stock assessment based on data that are > 5 years old but < 10 years old that finds current biomass exceeding B_{MSY} allows for a score of “low concern” (3.67).

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

According to the most recent stock assessment on vermilion snapper in the Gulf, overfishing is not occurring because F/F_{MSY} (0.075/0.135) = 0.56 (SEDAR 2020e; NOAA

2025). A score of “low concern” (5) is awarded.

Southern Atlantic Coast Stock - Vertical lines - SAFMC

Low Concern

According to the most recent stock assessment for vermilion snapper in the southeast Atlantic, overfishing is not occurring as F/FMSY (.25/.41) = .61 (SEDAR 2018b; NOAA 2025). A score of 5 (low concern) is awarded.

Warsaw grouper *(Epinephelus nigritus)*

1.1 Abundance

Gulf of America Stock - Set longlines - GFMC

High Concern

There is no formal stock assessment for Warsaw grouper in the Gulf. For management purposes, Warsaw grouper is grouped with snowy grouper, speckled hind, and yellowedge grouper in the Gulf of America Deep Water Grouper Complex (NOAA 2025). According to NOAA, the “overfished” status for the complex is “unknown” (NOAA 2025). The IUCN has assessed the species as “Near Threatened” in the Gulf (Cowan, J. et al 2015) and globally (Aguilar-Perera et al 2018), but these assessments are too old to use for scoring (data are > 10 years old). Warsaw grouper has been on the candidate list for ESA listing since 1999 (Federal Register 1999), and NMFS placed it on the “Species of Concern” list in 2004 for potential population decline and threats from fishing and bycatch (Federal Register 2004). This designation is not used for scoring abundance. In 2010, a petition to list Warsaw grouper under the ESA was denied (Federal Register 2010) with the rationale that “Warsaw grouper has always been too uncommonly captured in fisheries for data on landings or weight of fish landed to be a reliable indicator of population status and trends.” In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for *Epinephelus* (*Hypothordotus*) *nigritus* suggests a moderate vulnerability (see Justification), allowing for a score of “high concern” (1) for abundance.

Supplementary Information

Productivity-susceptibility analysis for Warsaw grouper in the Gulf. Productivity data primarily from (Farmer et al 2016) and references therein.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	1	49 mo (Farmer et al 2016)
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A	41 yrs (Farmer et al 2016)
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.05 (Farmer et al 2016)
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	Assumed > 20,000 based on estimates for other groupers (e.g., gag grouper: https://www.fisheries.noaa.gov/species/gag-grouper and snowy grouper - species account at SAFMC.net)
Average maximum size (cm)	< 100	100–300	> 300	2	230 cm TL {Haemstra and Randall 1993} in FishBase.org
Average size at maturity (cm)	< 40	40–200	> 200	2	81 cm (Farmer et al 2016)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Groupers (family Epinephelidae) are pelagic spawners (Orth 2023) Chapter 13
Productivity score (mean of attribute scores)				**1.67**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.26
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	High

1.2 Fishing Mortality

Gulf of America Stock - Set longlines - GFMC

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for Warsaw grouper in the Gulf. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of "moderate concern" (3).

Wreckfish *(Polyprion americanus)*

1.1 Abundance

Southern Atlantic Coast Stock - Vertical lines - SAFMC - Wreckfish (target)

Moderate Concern

The most recent stock assessment of wreckfish in the U.S. South Atlantic used data through 2010 and found biomass at that time to be above B_{MSY} ($SSB/SSB_{MSY} = 1.58$) (Rademeyer and Butterworth 2014). But that stock assessment is too old (data > 10 yrs old) to use for scoring (Seafood Watch 2020). NOAA still considers the stock "not overfished" (NOAA 2025), which, in lieu of better information, allows for a score of "moderate concern" (2.33).

1.2 Fishing Mortality

Southern Atlantic Coast Stock - Vertical lines - SAFMC - Wreckfish (target)

Moderate Concern

The 2014 wreckfish assessment determined that fishing mortality in 2010 was less than F_{MSY} ($F_{2010}/F_{MSY} = 0.583$) and that overfishing was not occurring at that time. But that assessment is too old to use for scoring (data > 10 years old). NOAA currently considers the stock not to be undergoing overfishing (NOAA 2025). Because there is no recent stock assessment, a score of "moderate concern" (3) is given.

Yellowedge grouper *(Hyporthodus flavolimbatus)*

1.1 Abundance

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Very Low Concern

The most recent stock assessment for yellowedge grouper in the Gulf used data from 2021 and found biomass at that time to be above B_{MSY} ($SSB_{2021}/SSB_{30\%SPR}$ = 174) (SEDAR 2023). A stock assessment using data < 5 years old with a finding that B/B_{MSY} is > 1 allows for a score of "very low concern" (5).

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

High Concern

No stock assessment has been conducted for yellowedge grouper in the U.S. South Atlantic. For management purposes, yellowedge grouper is grouped with blackfin snapper, misty grouper, queen snapper, sand tilefish, and silk snapper in the South Atlantic Deepwater Snapper-Grouper Complex (NOAA 2025). According to NOAA, the "overfished" status for that complex is "unknown" (NOAA 2025). The IUCN has assessed the species as "Least Concern" in the Gulf (Claro et al 2015)} and "Vulnerable" globally (Padovani-Ferreira et al 2018b). Both are based on data that are too old to use for scoring (data > 10 years old) (Seafood Watch 2020). In lieu of better information, a PSA can provide an indication of the relative vulnerability of a species, which in turn can be used as a proxy for the risk of being overfished. The PSA for yellowedge grouper suggests a high vulnerability (see Justification), which requires a score of "high concern" (1) for abundance.

Supplementary Information

Productivity-susceptibility analysis for yellowedge grouper. Data from (Farmer et al 2016) unless otherwise noted.

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5–15	> 15	2	96 mo (Farmer et al 2016)
Average maximum age (yrs) (do not use if max. size is available)	< 10	10–25	> 25	N/A as max size is scored	85 yrs (Farmer et al 2016)
Von Bertalanffy (Brody) Growth Coefficient (K)	> 0.25	0.15–0.25	< 0.15	3	0.06 (Farmer et al 2016)
Fecundity (eggs/yr)	> 20,000	100–20,000	< 100	1	Assumed > 20,000 based on estimates for other groupers (e.g., gag grouper: https://www.fisheries.noaa.gov/species/gag-grouper and snowy grouper - species account at SAFMC.net)
Average maximum size (cm)	< 100	100–300	> 300	2	115 cm (SEDAR 2011)
Average size at maturity (cm)	< 40	40–200	> 200	2	82 cm (Farmer et al 2016)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Groupers (family Epinephelidae) are pelagic spawners (Orth 2023) Chapter 13

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Productivity score (mean of attribute scores)				**1.83**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	> 90% of species concentration is unfished	70–90% of species concentration is unfished	**> 30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	> 67% of species' depth range is unfished	33–66% of species' depth range is unfished	**> 33% of species' depth range is unfished**	3	Default value selected
Seasonal availability (all fisheries)	Fisheries overlap with species < 3 months/year	Fisheries overlap with species 3–6 months/year	**Fisheries overlap with species > 6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increases its susceptibility to the gear	2	Default value selected

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Post-capture mortality (specific to fishery under assessment)	> 66% individuals survive post-capture	33–66% individuals survive post-capture	**Retained species or > 66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V = \sqrt{(P^2 + S^2)}$)	3.345
Vulnerability Rating: < 2.64 = Low vulnerability, ≥ 2.64 and ≤ 3.18 = Medium vulnerability, > 3.18 = High vulnerability	High

1.2 Fishing Mortality

Gulf of America Stock - Set longlines

Gulf of America Stock - Vertical lines

Low Concern

The most recent full stock assessment of Gulf yellowedge grouper determined fishing mortality to be below fishing mortality at MSY ($F_{2019–21}/F_{30\%SPR}$ = 0.77 (SEDAR 2023). A stock assessment using data < 10 years old with a finding that F < F_{MSY} allows for a score of “low concern” (5) for fishing mortality.

Southern Atlantic Coast Stock - Set longlines

Southern Atlantic Coast Stock - Vertical lines

Moderate Concern

Managers have not determined reference points relative to MSY or MSY proxies for yellowedge grouper in the U.S. South Atlantic. Therefore, the current fishing mortality relative to a sustainable level is unknown, which allows for a score of “moderate concern” (3).

Yellowmouth grouper *(Mycteroperca interstitialis)*

1.1 Abundance

Gulf of America Stock - Vertical lines - GFMC

Very Low Concern

Because scamp (*Mycteroperca phenax*) and yellowmouth grouper (*Mycteroperca interstitialis*) are difficult to distinguish from each other, the pair was assessed as a single complex in the most recent stock assessment in the Gulf. The assessment used data through 2020 and determined biomass to be above the spawning biomass at MSY ($SSB/SSB_{MSYproxy(30\%SPR)} = 1.62$) (SEDAR 2022b). The GFMC Science and Statistical Committee has recommended that an F_{MSY} proxy of F40%SPR is more appropriate for scamp than the F30%SPR currently used (GMFMC SSC 2022)—biomass in 2020 was also above the B_{MSY} threshold derived from this reference point. Status determination criteria have not been defined for the stock complex; i.e., stock status is considered "unknown" by NOAA (NOAA 2025). A recent stock assessment (data < 5 years old) with a finding that biomass is above an appropriate limit reference point allows for a score of "very low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the Gulf.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

High Concern

Because scamp (*Mycteroperca phenax*) and yellowmouth grouper (*Mycteroperca interstitialis*) are difficult to distinguish from each other, the pair was assessed as a single complex in the most recent stock assessment in the South Atlantic. The assessment used data through 2021, and found biomass at that time to be below the limit reference point ($SSB_{2021}/75\%SSB_{F40\%} = 0.27$) (SEDAR 2022d). Status determination criteria have not been defined for the stock complex; i.e., stock status is considered "unknown" by NOAA (NOAA 2025). A recent stock assessment (data < 5 years old) with a finding that biomass is below an appropriate limit reference point requires a score of "high concern" (1). This finding is applied to both scamp and yellowmouth grouper.

Supplementary Information

According to NOAA, the stock assessment "... supports a conclusion that scamp and yellowmouth grouper (scamp/yellowmouth grouper complex) is not subject to overfishing and overfished. An official stock status determination cannot be made until the fishery management plan is amended to adopt new criteria for this new stock complex. A formal status determination is expected in 2025" (NOAA 2025).

1.2 Fishing Mortality

Gulf of America Stock - Vertical lines - GFMC

Low Concern

The most recent stock assessment of the Gulf scamp and yellowmouth grouper complex suggests that the complex is not undergoing overfishing ($F_{2020}/F_{MSYproxy(30\%SPR)} = 0.54$), and that the stock had not been experiencing overfishing at any point in the time series (1986–2020) (SEDAR 2022b). The GFMC Science and Statistical Committee has recommended that an F_{MSY} proxy of $F_{40\%SPR}$ is more appropriate for scamp/yellowmouth grouper that the $F_{30\%SPR}$ currently used (GMFMC SSC 2022), but found that fishing mortality is also below this threshold (GMFMC SSC 2022). A recent stock assessment with a finding that $F < F_{MSY}$ allows for a score of "low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the Gulf.

Southern Atlantic Coast Stock - Diving

Southern Atlantic Coast Stock - Vertical lines

Low Concern

The most recent stock assessment of the South Atlantic scamp and yellowmouth grouper complex suggests that fishing mortality is below the F_{MSY} proxy ($F_{2019–21}/F_{40\%} = 0.81–0.91$, depending on model) (SEDAR 2022d). A recent stock assessment with a finding that $F < F_{MSY}$ allows for a score of "low concern" (5). This finding is applied to both scamp and yellowmouth grouper in the South Atlantic.

Yellowtail snapper *(Ocyurus chrysurus)*

1.1 Abundance

Southern Atlantic Coast/Gulf of America Stock - Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Very Low Concern

Yellowtail snapper is assessed as one stock, with the most recent assessment using data through 2023 (SEDAR 2025a). The assessment found biomass at that time to be above SSB_{MSY} ($SSB_{current}/SSB_{MSY}$ = 2,518.21 MT/1,720.18 MT = 1.46) (SEDAR 2025a). A stock assessment using data > 5 years old with a finding that $B > B_{MSY}$ allows for a score of "very low concern" (5).

1.2 Fishing Mortality

Southern Atlantic Coast/Gulf of America Stock - Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Low Concern

According to the 2025 stock assessment, the southeastern U.S. yellowtail snapper stock is not experiencing overfishing because $F_{current}/F_{MSY} = 0.263/0.423 = 0.62$ (SEDAR 2025a). Thus, a score of “low concern” (5) is awarded.

Criterion 2: Impacts on Other Species

All main retained and bycatch species in the fishery are evaluated under Criterion 2. Seafood Watch defines bycatch as all fisheries-related mortality or injury to species other than the retained catch. Examples include discards, endangered or threatened species catch, and ghost fishing. Species are evaluated using the same guidelines as in Criterion 1. When information on other species caught in the fishery is unavailable, the fishery's potential impacts on other species is scored according to the Unknown Bycatch Matrices, which are based on a synthesis of peer-reviewed literature and expert opinion on the bycatch impacts of each gear type. The fishery is also scored for the amount of non-retained catch (discards) and bait use relative to the retained catch. To determine the final Criterion 2 score, the score for the lowest scoring retained/bycatch species is multiplied by the discard/bait score. The Criterion 2 rating is determined as follows:

- Score >3.2 = **Green** or Low concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate concern
- Score ≤2.2 = **Red** or High concern

Rating is Critical if Factor 2.3 (Fishing Mortality) is Crtitical

Guiding principles

- *Ensure all affected stocks are healthy and abundant.*
- *Fish all affected stocks at sustainable level.*
- *Minimize bycatch.*

Criterion 2 Summary

Criterion 2 score(s) overview

This table(s) provides an overview of the Criterion 2 subscore, discards+bait modifier, and final Criterion 2 score for each fishery. A separate table is provided for each species/stock that we want an overall rating for.

Almaco jack			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving - GFMC	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Banded rudderfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Black grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast/Gulf of America Stock - Diving - SAFMC	1.000	1.000: < 100%	**Red (1.000)**
Southern Atlantic Coast/Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**

Blackfin snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Blue tilefish/Golden tilefish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines - Golden tilefish fishery	5.000	1.000: < 100%	**Green (5.000)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Blueline tilefish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Gag			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.526	1.000: < 100%	**Red (1.526)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Gray snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Gray triggerfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Greater amberjack			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Hogfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Eastern Gulf of America/West Florida Stock - Diving - GFMC	2.236	1.000: < 100%	**Yellow (2.236)**
Georgia through North Carolina (GA/NC) Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Florida Keys/East Florida Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Georgia through North Carolina (GA/NC) Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**
Florida Keys/East Florida Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Jolthead porgy			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Set longlines - GFMC	1.732	1.000: < 100%	**Red (1.732)**

Knobbed porgy			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Lane snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Lesser amberjack			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Mutton snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast/Gulf of America Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Southern Atlantic Coast/Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Queen snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Queen triggerfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Red grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Red porgy			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Red snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Diving	2.236	1.000: < 100%	**Yellow (2.236)**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Scamp			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Silk snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Snowy grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Speckled hind			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.732	1.000: < 100%	**Red (1.732)**

Vermilion snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines - SAFMC	1.000	1.000: < 100%	**Red (1.000)**

Warsaw grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines - GFMC	1.732	1.000: < 100%	**Red (1.732)**

Wreckfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Vertical lines - SAFMC - Wreckfish (target)	5.000	1.000: < 100%	**Green (5.000)**

Yellowedge grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Gulf of America Stock - Set longlines	1.732	1.000: < 100%	**Red (1.732)**
Southern Atlantic Coast Stock - Set longlines	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Vertical lines	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Yellowmouth grouper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast Stock - Diving	1.000	1.000: < 100%	**Red (1.000)**
Gulf of America Stock - Vertical lines - GFMC	2.236	1.000: < 100%	**Yellow (2.236)**
Southern Atlantic Coast Stock - Vertical lines	1.000	1.000: < 100%	**Red (1.000)**

Yellowtail snapper			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Southern Atlantic Coast/Gulf of America Stock - Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)	5.000	1.000: < 100%	**Green (5.000)**

Criterion 2 main assessed species/stocks table(s)

This table(s) provides a list of all species/stocks included in this assessment for each 'fishery' (as defined by a region/method combination). The text following this table(s) provides an explanation of the reasons the listed species were selected for inclusion in the assessment.

Diving - GFMC			
Sub Score: 2.236	**Discard Rate: 1.000**		**Score: 2.236**
Species	**Abundance**	**Fishing Mortality**	**Score**
Gag	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Greater amberjack	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Red snapper	2.330: Moderate Concern	5.000: Low Concern	**Green (3.413)**
Gray snapper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Red grouper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**

Set longlines - GFMC			
Sub Score: 1.732	**Discard Rate: 1.000**		**Score: 1.732**
Species	**Abundance**	**Fishing Mortality**	**Score**
Snowy grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Speckled hind	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Gag	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Blue tilefish/Golden tilefish	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Blueline tilefish	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Red snapper	2.330: Moderate Concern	5.000: Low Concern	**Green (3.413)**
Mutton snapper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Red grouper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Scamp	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Yellowedge grouper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Vertical lines - GFMC			
Sub Score: 2.236	**Discard Rate: 1.000**		**Score: 2.236**
Species	**Abundance**	**Fishing Mortality**	**Score**
Gag	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Greater amberjack	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Red porgy	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Silk snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Red snapper	2.330: Moderate Concern	5.000: Low Concern	**Green (3.413)**
Vermilion snapper	3.670: Low Concern	5.000: Low Concern	**Green (4.284)**
Red grouper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Scamp	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)			
Sub Score: 5.000	**Discard Rate: 1.000**		**Score: 5.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Yellowtail snapper	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**

Diving - SAFMC			
Sub Score: 1.000	**Discard Rate: 1.000**		**Score: 1.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Gag	1.000: High Concern	1.000: High Concern	**Red (1.000)**
Gray triggerfish	2.330: Moderate Concern	1.000: High Concern	**Red (1.526)**
Red grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Hogfish	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Yellowmouth grouper	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Black grouper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Gray snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Hogfish	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Greater amberjack	3.670: Low Concern	5.000: Low Concern	**Green (4.284)**
Set longlines - SAFMC			
Sub Score: 1.000	**Discard Rate: 1.000**		**Score: 1.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Snowy grouper	1.000: High Concern	1.000: High Concern	**Red (1.000)**
Red grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Yellowedge grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Greater amberjack	3.670: Low Concern	5.000: Low Concern	**Green (4.284)**
Blueline tilefish	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Set longlines - SAFMC - Golden tilefish fishery			
Sub Score: 5.000	**Discard Rate: 1.000**		**Score: 5.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Blue tilefish/Golden tilefish	3.670: Low Concern	3.000: Moderate Concern	**Green (3.318)**

Vertical lines - SAFMC			
Sub Score: 1.000	**Discard Rate: 1.000**		**Score: 1.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Snowy grouper	1.000: High Concern	1.000: High Concern	**Red (1.000)**
Gag	1.000: High Concern	1.000: High Concern	**Red (1.000)**
Red snapper	1.000: High Concern	1.000: High Concern	**Red (1.000)**
Gray triggerfish	2.330: Moderate Concern	1.000: High Concern	**Red (1.526)**
Yellowedge grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Red porgy	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Red grouper	1.000: High Concern	3.000: Moderate Concern	**Red (1.732)**
Scamp	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	**Yellow (2.236)**
Queen snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Lane snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Gray snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Silk snapper	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Atlantic sharpnose shark	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**
Blue tilefish/Golden tilefish	3.670: Low Concern	3.000: Moderate Concern	**Green (3.318)**
Greater amberjack	3.670: Low Concern	5.000: Low Concern	**Green (4.284)**
Vermilion snapper	3.670: Low Concern	5.000: Low Concern	**Green (4.284)**
Blueline tilefish	5.000: Very Low Concern	5.000: Low Concern	**Green (5.000)**
Vertical lines - SAFMC - Wreckfish (target)			
Sub Score: 5.000	**Discard Rate: 1.000**		**Score: 5.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Wreckfish	2.330: Moderate Concern	3.000: Moderate Concern	**Yellow (2.644)**

The Criterion 2 score for the stock-fishery combination being rated (e.g., vermilion snapper caught by vertical line in the U.S. South Atlantic) is the lowest abundance-fishing mortality score of all the other "main species" caught (including both target and nontarget, retained and discarded species), multiplied by the discard + bait use rate.

Determining main species

In v4 of the Seafood Watch Standard for Fisheries {Seafood Watch 2020}, a main species is any

species that meets one or more of the following conditions ("catch" here includes landings plus discards):

1. A common component of the catch (as guidance, > 5% of the catch in most cases), or

2. Overfished, endangered, threatened, undergoing overfishing, or otherwise a species of concern, where catch occurs regularly and may significantly contribute to the conservation concern (i.e., more than a negligible and/or sporadic level of catch). As guidance, mortality of the species caused by this fishery is > 5% of a sustainable level, or

3. Fishery under assessment is one of the main sources of fishing mortality for the species, including bait species if known (as guidance, ≈20% or more of total fishing mortality), and

4. In fisheries that use bait, the bait species should be treated as a bycatch species if it meets the preceding main species criteria.

Data sources

A number of data sources were used in this analysis:

- Commercial landings
    - Public databases from NOAA, ACCSP, and GulfFIN. These databases provide nonconfidential data on U.S. commercial landings by species, management region (e.g., Gulf, South Atlantic), state, and year. These databases do not provide gear type or discard data. In addition, these datasets assign landings in southern Florida (specifically in Monroe County) differently than do regional managers (compare to landings recorded on the SERO ACL monitoring website). For these reasons, these datasets are not used, except to determine where recreational fisheries account for the majority of mortality of any given stock (see the following "Recreational landings"):
        - NOAA Fisheries One Stop Shop: https://www.fisheries.noaa.gov/foss/f?p=215:200::::::
        - ACCSP Public Data Warehouse: https://www.accsp.org/what-we-do/data-warehouse/
        - GulfFIN Public Databases: https://data.gsmfc.org/
        - SERO ACL monitoring: https://www.fisheries.noaa.gov/southeast/sustainable-fisheries/southeast-region-annual-catch-limit-acl-monitoring
    - Commercial landings by gear type were obtained through a data request to ACCSP (see Appendix A for a summary of the data received, and Appendix D for details on the request). This request forms the basis of the following catch tables (the Florida landings in this dataset appear to be assigned in the same way as regional managers do). This dataset is limited to the U.S. South Atlantic Region states, but it covers all nonconfidential Florida landings, including those assigned

to the Gulf region. The data are aggregated to minimize the data loss as the result of confidentiality rules, such that catches are summed across the years included (2018–22) and by region rather than state. The dataset does not include discards.

- Commercial discards
    - Observer data from the Southeast Observer Program for 2018–22 (aggregated) were obtained by request (NMFS SEFSC Observer program, July 2023). The data received were from three separate programs. The percentage of the fisheries covered by these programs is quite low (1–2%), so these data are not used alone for characterizing the fishery. Instead, they are used to identify species that are typically discarded for consideration as main species (per the preceding outline of conditions). Because "target species" is identified in some of these datasets, they are the primary source for the conclusion that the yellowtail, wreckfish, and South Atlantic blue/golden tilefish fisheries are separate fisheries. See Appendices B and C for more details.
        - South Atlantic Vertical Line Observer Program, stratified by region (South Atlantic only), species, target species (as named by the captain before hauling), number of fish, average weight of fish, and disposition (kept, discarded alive, discarded dead). Sharks are not routinely weighed in these programs, and no average weight was provided in the dataset.
        - Shark Bottom Longline Observer Program, stratified by region (Gulf, South Atlantic), species, target species, number of fish, average weight of fish, and disposition. This program was expanded in 2022 to include the South Atlantic Snapper Grouper Bottom Longline fishery (this fishery is not included in the present assessment because it only catches golden tilefish).
        - Reef Fish Observer Program, stratified by region (Gulf only), gear (vertical longline, bottom longline), species, number of fish, average weight of fish, and disposition. Target species is not requested or provided in this program.
    - Data from NOAA's Trip Interview Program (TIP) Catch Composition Data 2022 were obtained by request (NMFS SEFSC, July 2023). These suggest a similar catch composition as seen in the observer data, and so are not considered further here (instead, they can be found in Appendix F).
- Recreational landings
    - Recreational landings estimates are provided in the NOAA FOSS dataset. These data are used in two ways:
        - Fishing mortality for stocks that account for ≥ 5% of the catch of a fishery (per the first bullet in the preceding main species conditions) can be scored a "low concern" where the majority of the mortality is from the recreational sector.
        - Stocks that meet the second or third bullet in the preceding main species conditions can be excluded as main species if the recreational sector accounts for the majority of landings (as a proxy for fishing mortality).

- Various other data sources for protected taxa such as turtles, seabirds, and mammals (see the following taxon-specific accounts).

The preceding data sources are summarized in the Appendices.

Landings data

Based on the ACCSP landings data (Appendix A), the main species in the South Atlantic are as follows (Table 3):

Main species condition	Vertical line	Vertical line—yellow tail target	Vertical line—wreckfish target	Longline	Longline—blue/golden tilefish target	Dive
> 5% of the catch	Vermilion snapper Greater amberjack Gag Gray triggerfish Snowy grouper Almaco jack	Yellow tail snapper	Wreckfish	Greater amberjack Snowy grouper Blueline tilefish Red grouper Yellowedge grouper	Blue/golden tilefish	Greater amberjack Gag Gray snapper Black grouper Hogfish
Species of Concern and > 5% of sustainable F	Red snapper Red porgy Red grouper	None	None	None	None	Red grouper

> 20% of total F	Blueline tilefish Scamp Silk snapper Yellowedge grouper	None	None	None	None	Yellowmouth grouper

Table 3: Summary of main species caught in South Atlantic snapper-grouper fisheries, based on landings data (2018–22, summed).

In the Gulf of Mexico, the landings data indicate the following main species (Table 4):

Main species condition	**Vertical line**	**Longline**	**Dive**
> 5% of the catch	Red snapper Red grouper Vermilion snapper Gag	Red snapper Red grouper Gag Yellowedge grouper	Red snapper Red grouper Gag Greater amberjack Gray snapper
Species of Concern and > 5% of sustainable F	Greater amberjack	None	None

> 20% of total F	Silk snapper Scamp Red porgy	Scamp Blueline tilefish Blue/golden tilefish Snowy grouper Mutton snapper Speckled hind	None

Table 4: Summary of main species caught in Gulf reef fish fisheries, based on landings data (2018–22, summed).

Observer data

The observer data show that many other species are caught in the fisheries, including various finfish and sharks (see Appendices B and C). The low observer coverage makes interpretation of those data difficult, but there do not appear to be any main species other than those already identified through the preceding landings data.

- A number of shark species are caught on vertical line and bottom longline in the South Atlantic and Gulf, some of which are species of concern. All individuals are discarded dead, likely because the retention of sharks is not permitted under the permits used for targeting reef fish (those with Snapper-Grouper SG1 or SG2 permits in the South Atlantic, or Commercial Reef Fish permit in the Gulf: https://www.fisheries.noaa.gov/southeast/resources-fishing/southeast-permits-information). All individuals are from populations managed by NOAA under a different fishery management plan (the Consolidated Atlantic Highly Migratory Species FMP) and are subject to targeted fisheries that likely cause far more mortality than the incidental catch in the reef fish fisheries (retention of 24 of the 43 species managed by NOAA is generally prohibited even for those with a permit to retain sharks: https://www.fisheries.noaa.gov/insight/understanding-atlantic-shark-fishing). Where the target species is identified, there is a clear distinction between the targeted shark fishery and the snapper-grouper/reef fish fisheries (e.g., Appendix C, Table 32).
- Goliath grouper is caught on vertical line and bottom longline in the Gulf. The species is included in the reef fish/snapper-grouper FMPs in the Gulf and U.S. South Atlantic, and it is considered a species of concern in the region ("Endangered," according to the IUCN). Retention is prohibited in both regions and the U.S. Caribbean, so NOAA concludes that fishing mortality is approaching zero {NOAA 2025}. Individuals are discarded alive.

Protected species

Mammals

The South Atlantic and Gulf vertical line and bottom longline fisheries are considered Category III in the Marine Mammal Protection Act (MMPA) List of Fisheries, meaning that there is only a remote likelihood of (or no known) incidental death or serious injury of marine mammals {NOAA 2025b}. The only marine mammal documented in these fisheries in the most recent five years assessed (2015–19) is the common bottlenose dolphin (*Tursiops truncatus truncatus*), most likely from the Northern Gulf of America Continental Shelf Stock {NOAA 2025b} {NOAA 2021s}. A minimum of three were caught over this period, although low observer coverage precludes an estimate of the total number of individuals caught. Common bottlenose dolphin is not listed under the U.S. Endangered Species Act (ESA), and the stock is not considered "strategic" under the MMPA [meaning that total mortality is not thought to exceed the potential biological removal (PBR)] {NOAA 2021s}. Mortality is likely dominated by the shrimp trawl fishery, for which the mean annual estimated mortality and serious injury for 2015–19 is 64 animals {NOAA 2021s}. The stock is not considered a main species in the present assessment.

Turtles

Sea turtles have also been documented caught in the snapper-grouper/reef fish fisheries in both the South Atlantic and Gulf (see Appendix E). Most of those caught are loggerhead turtle (*Caretta caretta*), a species listed under the ESA since 1978. In 2011, after a status review for the species, NOAA identified nine loggerhead Distinct Population Segments (DPS). The DPS most likely affected by the U.S. reef fish fisheries is the Northwest Atlantic DPS. This DPS remains "Threatened," with the greatest threat being fisheries bycatch {NOAA 2023e}. Sources of fisheries bycatch mortality include U.S. federal fisheries, U.S. state fisheries, and non-U.S. fisheries. There is no comprehensive accounting of the relative impact of each of these sources on the DPS. Among U.S. fisheries, pelagic longline and bottom trawl fisheries represent the most significant threats to the DPS (see Appendix E for a list of anticipated "takes" and mortalities, from biological opinions for multiple U.S. federal fisheries) {NOAA 2023e}. According to the latest biological opinion for the U.S. shrimp trawl fishery, the 5-year anticipated take of loggerhead was 72,670 turtles, with an estimated mortality of 2,150 {NOAA 2021t}. The latest biological opinion for the Gulf of Mexico Reef Fish Fishery was issued in 2011 {NOAA 2011b}, with a 2016 review {NOAA 2016d}. Incidental take over a 3-year period was anticipated at 203 loggerheads, of which 78 were lethal {NOAA 2011b}. Takes and mortalities are distributed roughly evenly across the bottom longline, commercial vertical line, and recreational vertical line fisheries {NOAA 2011b}. In the South Atlantic snapper-grouper fishery, incidental take was anticipated to be 617, with 196 mortalities (see Appendix 5) {NOAA 2016b}. For this fishery, recreational takes (and mortality) are an order of magnitude higher than those of the commercial fishery. Most of these are in the vertical line fishery, with anticipated takes in the bottom longline fishery being negligible or sporadic. In summary, although the relative contributions of the snapper-grouper and reef fish fisheries to total loggerhead mortality are likely low relative to all other fisheries' bycatch impacts, the lack of recent data and understanding of impacts precludes omitting them from these fisheries,

except the South Atlantic bottom longline fishery.

Seabirds

Observers documented a single unspecified seabird interaction in the Gulf bottom longline fishery in 2015. None was documented in the vertical line fishery in 2015 {NOAA 2016d}, nor in either fishery in 2014 (REF). The frequency of these events is rare {NOAA 2016d}, which makes interpreting the findings difficult, given the low level of observer coverage. Nonetheless, seabird take appears to be sporadic and/or negligible, so seabirds are excluded from further consideration in this Seafood Watch assessment.

Other ESA-listed species

Smalltooth sawfish (*Pristis pectinata*) is an endangered species that interacts with the vertical line and bottom longline reef fish fisheries. The primary threat to the U.S. DPS is bycatch, particularly in the shrimp trawl fisheries, but also in the southeast coastal gillnet fishery for sharks and finfish and the shark bottom longline fishery {NOAA 2009} {Graham et al 2022}. The anticipated bycatch of smalltooth sawfish in the shrimp trawl fishery is 3,612 captures and 1,806 mortalities over the next 10 years. The anticipated bycatch in the reef fish fisheries is eight nonlethal interactions in the Gulf, and eight nonlethal interactions in the South Atlantic (Appendix E) {NOAA 2021t}. Smalltooth sawfish is excluded from further consideration in the present assessment because bycatch mortality appears to be negligible and/or sporadic.

Criterion 2 Assessment

Scoring Guidelines

Factor 2.1 - Abundance

(same as Factor 1.1 above)

Factor 2.2 - Fishing Mortality

(same as Factor 1.2 above)

Factor 2.3 - Modifying Factor: Discards and Bait Use

Goal: Fishery optimizes the utilization of marine and freshwater resources by minimizing post-harvest loss. For fisheries that use bait, bait is used efficiently.

Scoring Guidelines: The discard rate is the sum of all dead discards (i.e. non-retained catch) plus bait use divided by the total retained catch.

Ratio of bait + discards/landings	**Factor 2.3 score**
<100%	1
>=100	0.75

Atlantic sharpnose shark *(Rhizoprionodon terraenovae)*

2.1 Abundance

Atlantic Stock - Vertical lines - SAFMC

Moderate Concern

The most recent stock assessment for Atlantic sharpnose shark in the Atlantic and Gulf was conducted in 2013 using data through 2011 (NOAA 2021p). Biomass for the Atlantic stock was estimated at 10,100,000 pups, and B_{MSY} was 4,860,000 pups (B/B_{MSY} = 2.08), so the stock was considered not overfished at that time (SEDAR 2013; NOAA 2021p). But the most recent year of data is > 10 years old and cannot be used for scoring. According to NOAA, the "overfished" status of the stock is "not overfished" (NOAA 2025). The NOAA status determination allows for a score of "moderate concern" (2.33).

2.2 Fishing Mortality

Atlantic Stock - Vertical lines - SAFMC

Moderate Concern

According to the most recent stock assessment of sharpnose shark in the Atlantic and Gulf, overfishing is not occurring (SEDAR 2013). F/F_{MSY} was determined to be 0.043 Apical F/0.184 Apical F = 0.23. But the data used in that assessment are now 10 years old, thus precluding a rating of "low concern." Therefore, a score of "moderate concern" (3) is awarded.

Loggerhead turtle *(Caretta caretta)*

2.1 Abundance

Northwest Atlantic Ocean DPS Stock - Set longlines - GFMC

Northwest Atlantic Ocean DPS Stock - Vertical lines - GFMC

Northwest Atlantic Ocean DPS Stock - Vertical lines - SAFMC

High Concern

The Northwest Atlantic Ocean DPS of the loggerhead turtle is listed as "Threatened" under the ESA {76 Federal Register 184}, so abundance is scored a "high concern" (1).

2.2 Fishing Mortality

Northwest Atlantic Ocean DPS Stock - Set longlines - GFMC

Northwest Atlantic Ocean DPS Stock - Vertical lines - GFMC

Northwest Atlantic Ocean DPS Stock - Vertical lines - SAFMC

Low Concern

As noted in the Criterion 2 Summary, although direct comparison of sources of mortality should be done with caution, given the rarity of interactions and the generally low level of observer coverage, it seems likely that the Gulf vertical line and bottom longline reef fish fisheries and the South Atlantic vertical line snapper-grouper fishery are not substantial contributors to the overall mortality of loggerhead sea turtle. This finding allows for a score of “low concern” (5) for fishing mortality.

Supplementary Information

In the Gulf, observed sea turtle takes in the vertical line and the bottom longline components in 2015 were four and two, respectively (NOAA 2016d). All turtles caught were loggerhead (*Caretta caretta*) and all were released alive (though one was comatose or unresponsive) (NOAA 2016d). NOAA scientists have provided estimated takes (which are not the same as mortalities), but the numbers are highly uncertain because of the small number of interactions and the quite low observer coverage—for the vertical line fishery in 2015, there were 189 estimated takes (95%CI = 21.2–680.4); for the bottom longline fishery in 2013, there were 11.9 estimated takes (90%CI = 3.4–41.4) (NOAA 2016d). A more recent study of the Gulf reef fish bottom longline fishery observer data from 2006 to 2021 found that 34 turtle takes were observed over the period, and all were loggerhead (Peterson et al 2023). Takes varied by year, from a high of seven in 2007 to zero in 2012 and 2019–21 (Peterson et al 2023). Approximately 24% of these were dead or comatose when first assessed by the observer.

2.3 Discard Rate/Landings

All fisheries

< 100%

Observer data indicate that the majority of the catch is retained in the longline and vertical line fisheries (Figure 12), though the weights presented do not include sharks (because weight is not routinely measured by observers). No information was found on bait use in the fisheries. Based on the available information, it is assumed that the weight of discards + bait does not exceed the weight of the retained catch, allowing for a maximum score modifier of 1.0.

There are no observers for the dive fisheries. Diving is a selective method that uses no bait, though there is evidence that divers discard at least some species [for example, 26% of

hogfish in the eastern Gulf (Addis et al 2018)]. Discards + bait use is still likely to be less than landings.

Supplementary Information

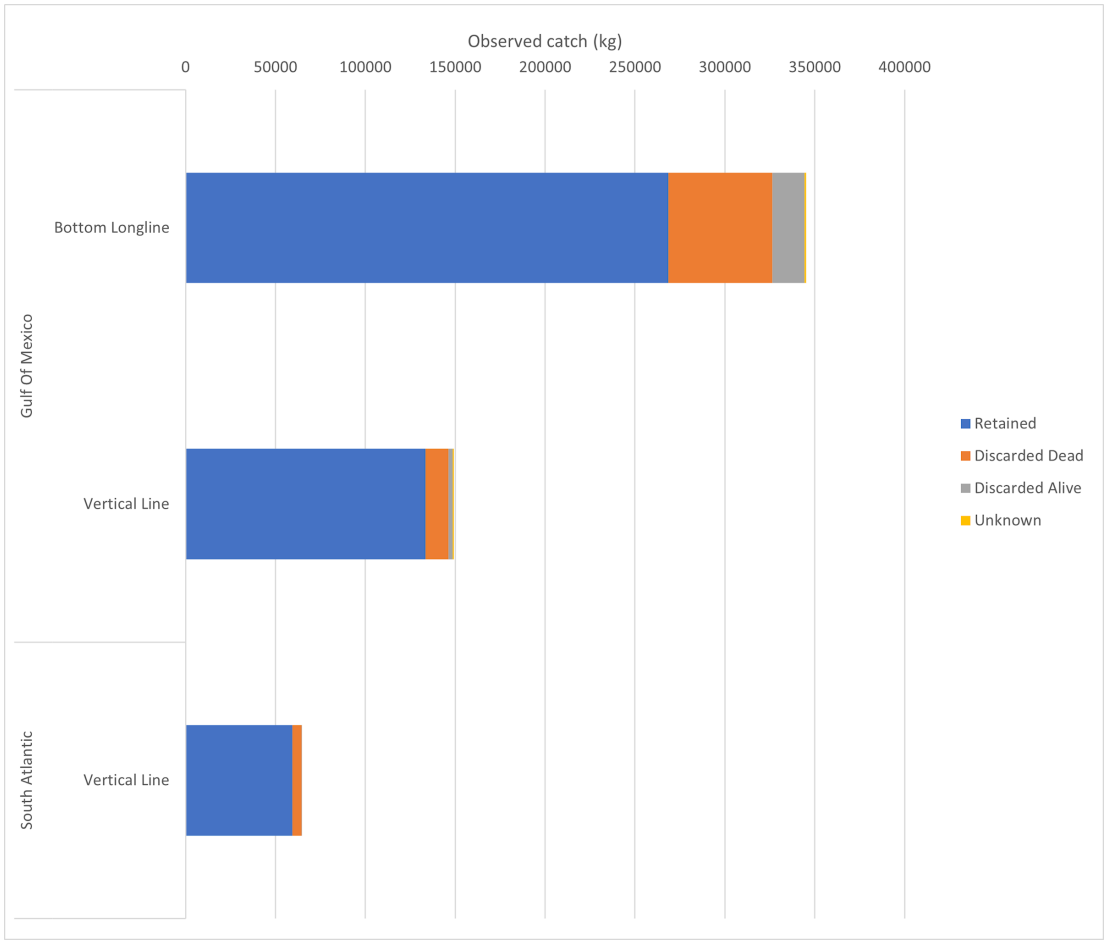


Figure 12: Observed catch of all species by region, gear, and and disposition, 2018–22 (summed). Data from the Reef Fish Observer Program and South Atlantic Vertical Line Observer Program.

Criterion 3: Management Effectiveness

Five factors are evaluated in Criterion 3: Management Strategy and Implementation, Bycatch Strategy, Scientific Research/Monitoring, Enforcement of Regulations, and Inclusion of Stakeholders. Each is scored as either 'highly effective', 'moderately effective', 'ineffective,' or 'critical'. The final Criterion 3 score is determined as follows:

- *5 (Very Low Concern) — Meets the standards of 'highly effective' for all five factors considered.*
- *4 (Low Concern) — Meets the standards of 'highly effective' for 'management strategy and implementation' and at least 'moderately effective' for all other factors.*
- *3 (Moderate Concern) — Meets the standards for at least 'moderately effective' for all five factors.*
- *2 (High Concern) — At a minimum, meets standards for 'moderately effective' for Management Strategy and Implementation and Bycatch Strategy, but at least one other factor is rated 'ineffective.'*
- *1 (Very High Concern) — Management Strategy and Implementation and/or Bycatch Management are 'ineffective.'*
- *0 (Critical) — Management Strategy and Implementation is 'critical'.*

The Criterion 3 rating is determined as follows:

- Score >3.2 = **Green** or Low concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate concern
- Score ≤2.2 = **Red** or High concern

Rating is Critical if Management Strategy and Implementation is Critical.

Guiding principle

- The fishery is managed to sustain the long-term productivity of all impacted species.

Five factors are evaluated in Criterion 3: Management Strategy and Implementation, Bycatch Strategy, Scientific Research/Monitoring, Enforcement of Regulations, and Inclusion of Stakeholders. Each is scored as either 'highly effective', 'moderately effective', 'ineffective,' or 'critical'. The final Criterion 3 score is determined as follows:

Criterion 3 summary

Fishery	Management Strategy And Implementation	Bycatch Strategy	Scientific Data Collection and Analysis	Enforcement of and Compliance with Management Regulations	Stakeholder Inclusion	Score
Diving - GFMC	Moderately Effective	Highly effective	Highly effective	Moderately Effective	Highly effective	Yellow (3.000)
Set longlines - GFMC	Moderately Effective	Moderately Effective	Moderately Effective	Moderately Effective	Highly effective	Yellow (3.000)
Vertical lines - GFMC	Moderately Effective	Moderately Effective	Moderately Effective	Moderately Effective	Highly effective	Yellow (3.000)
Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)	Highly effective	Highly effective	Highly effective	Moderately Effective	Highly effective	Green (4.000)
Diving - SAFMC	Moderately Effective	Highly effective	Highly effective	Moderately Effective	Highly effective	Yellow (3.000)
Set longlines - SAFMC	Moderately Effective	Moderately Effective	Highly effective	Moderately Effective	Highly effective	Yellow (3.000)
Set longlines - SAFMC - Golden tilefish fishery	Highly effective	Highly effective	Highly effective	Moderately Effective	Highly effective	Green (4.000)
Vertical lines - SAFMC	Moderately Effective	Moderately Effective	Moderately Effective	Moderately Effective	Highly effective	Yellow (3.000)
Vertical lines - SAFMC - Wreckfish (target)	Highly effective	Highly effective	Moderately Effective	Moderately Effective	Highly effective	Green (4.000)

Management Strategy Summary

Factor 3.1 for the U.S. South Atlantic and Gulf fisheries is scored for all the main retained species, while strategies for preventing the catch of nontargeted species and nonretained species are accounted for in factor 3.2. An overview of information relevant to factors 3.1 and 3.2 for *all* fisheries follows.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the principal law governing marine fisheries in the United States. Adopted in 1976, the Act has been amended a number of times, most recently in 2006 (though more recent regulatory actions through NOAA have revised the guidelines intended to effectively implement the requirements of the MSA). The MSA, as amended, requires Regional Fishery Management Councils (RFMC) to develop and implement fishery management plans (FMP), which are then subject to approval by the Secretary of Commerce. The federal fisheries for the U.S. South Atlantic reef fish are managed by the South Atlantic Fishery Management Council (SAFMC) through the Snapper-

Grouper Fishery of the South Atlantic Region FMP, while similar fisheries in the U.S. Gulf are managed by the Gulf Fishery Management Council (GFMC) through the Reef Fish Resources of the Gulf of America FMP. The Councils comanage impacts on a number of reef fish species. The current FMPs and a comprehensive list of all Amendments that have been implemented or are in development, along with a summary of each, are available on the respective Councils' websites {SAFMC 2023} {GMFMC 2023}.

Key provisions of the MSA of particular importance in Seafood Watch assessments are that measures shall prevent overfishing, be based on the best scientific information available, and minimize bycatch or mortality of bycatch. The 2006 reauthorization of the Act established the legal framework for implementing the precautionary principle by requiring that: (1) annual catch limits be set for the majority of federally managed stocks (exemptions for stocks managed with international agreements or with life cycles less than 1 year); (2) these catch limits restrict the probability of overfishing to less than or equal to 50%; and (3) the probability of overfishing be reduced with increasing scientific uncertainty {Federal Register 2009}.

In setting catch limits in order to prevent overfishing a stock, the catch at MSY (i.e., the overfishing limit) is reduced to account for scientific uncertainty and management uncertainty (Figure 13). Exactly how this strategy is implemented is largely left to the Councils, with considerable variation in stock assessment frequency and the method used to estimate the overfishing limits, different risk tolerance policies for reducing overfishing limits to allowable biological catches (ABC) to account for scientific uncertainty, and different procedures for reducing both ABCs and annual catch limits (ACL) {Free et al 2023}. These procedures often vary among different FMPs developed by the same Council. Both the SAFMC and GFMC have a tiered approach that increases buffers with increasing uncertainty—with relatively small buffers where there are data-rich stock assessments and quantified uncertainty, through larger buffers where the only information available might be landings data and expert opinion; reef fish fall into a number of these tiers in both the SAFMC and GFMC ({Free et al 2023}, supplemental material).

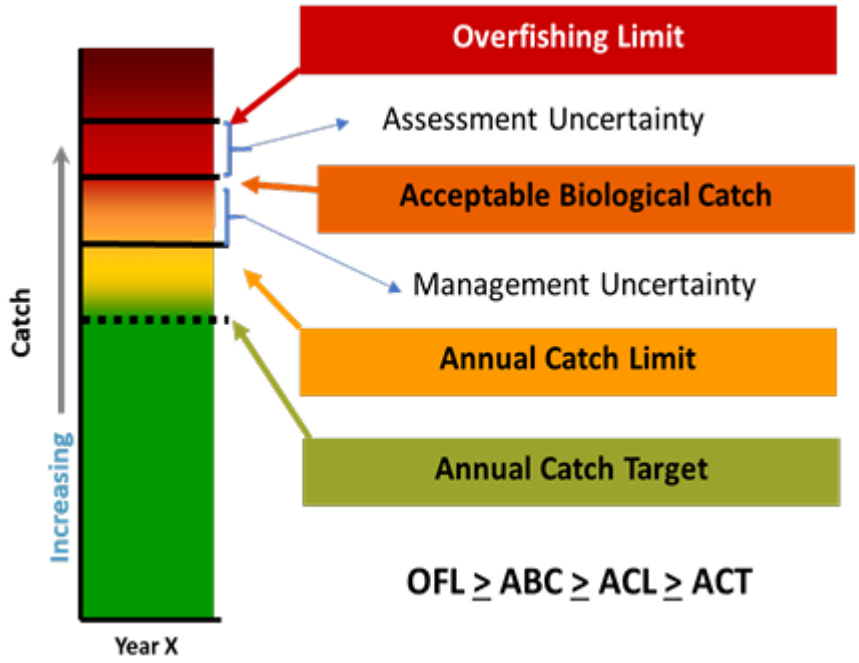


Figure 13: Illustration of the tiered approach toward establishing the overfishing limit (OFL), acceptable biological catch (ABC) that accounts for scientific uncertainty, annual catch limit (ACL), and annual catch target (ACT), which account for management uncertainty. Illustration from {SAFMC 2023c}.

The MSA establishes MSY as the basis and target for fishery management, and it specifies that a stock should be determined to be:

- **subject to overfishing** whenever too many fish are being harvested from a population (a stock or stock complex is subjected to a level of fishing mortality or total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis; i.e., F_{MSY}), and
- **overfished** when the population is too low (the level of biomass drops below the capacity of the stock or stock complex to produce MSY on a continuing basis).

The stock-specific status determination criteria are published annually as part of the NOAA Status of Stocks report (main webpage for 2023 at https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-2023, determination criteria document at bottom of page).

Criterion 3 Assessment

Scoring Guidelines

Factor 3.1 - Management Strategy and Implementation

Considerations: What type of management measures are in place? Are there appropriate management goals, and is there evidence that management goals are being met? Do managers follow scientific advice? To achieve a highly effective rating, there must be appropriately defined management goals, precautionary policies that are based on scientific advice, and evidence that the measures in place have been successful at maintaining/rebuilding species.

Factor 3.2 - Bycatch Strategy

Considerations: What type of management strategy/measures are in place to reduce the impacts of the fishery on bycatch species and when applicable, to minimize ghost fishing? How successful are these management measures? To achieve a Highly Effective rating, the fishery must have no or low bycatch, or if there are bycatch or ghost fishing concerns, there must be effective measures in place to minimize impacts.

Factor 3.3 - Scientific Research and Monitoring

Considerations: How much and what types of data are collected to evaluate the fishery's impact on the species? Is there adequate monitoring of bycatch? To achieve a Highly Effective rating, regular, robust population assessments must be conducted for target or retained species, and an adequate bycatch data collection program must be in place to ensure bycatch management goals are met.

Factor 3.4 - Enforcement of Management Regulations

Considerations: Do fishermen comply with regulations, and how is this monitored? To achieve a Highly Effective rating, there must be regular enforcement of regulations and verification of compliance.

Factor 3.5 - Stakeholder Inclusion

Considerations: Are stakeholders involved/included in the decision-making process? Stakeholders are individuals/groups/organizations that have an interest in the fishery or that may be affected by the management of the fishery (e.g., fishermen, conservation groups, etc.). A Highly Effective rating is given if the management process is transparent, if high participation by all stakeholders is encouraged, and if there a mechanism to effectively address user conflicts.

3.1 Management Strategy And Implementation

Diving - GFMC

Moderately Effective

See the Gulf of Mexico vertical line reef fishery for a full account. For the dive fishery, all the main retained stocks have appropriate reference points defined, and all have annual catch limits in place. Two stocks are considered overfished with overfishing still occurring (gag and greater amberjack). Overall, the management strategy implemented by the GFMC for snappers, groupers, and other reef fishes is deliberate and appropriate for the species (see Supplementary Information, Table 5). But because management appears insufficient to prevent overfishing of some stocks, management strategy and implementation for the GFMC dive reef fish fishery is considered “moderately effective.”

Supplementary Information

Table 5: Status, landings, reference points, and ACLs for the main retained species in the dive reef fish fishery in the Gulf of Mexico. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level, and are not separated by commercial vs. recreational catch in the Gulf (referred to in the table as "joint"). Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Reef Fish Resources FMP of the Gulf Region.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (all fisheries) (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Gulf of America	Gag	Yes	Yes	331	1,395	Yes	Yes (IFQ)
Gulf of America	Gray snapper	No	No	56	1,758	Yes	Yes (joint)
Gulf of America	Greater amberjack	Yes	Yes (Year 7 of 10)	175	398	Yes	Yes
Gulf of America	Red grouper	No	No	1,203	1,430	Yes	Yes (IFQ)
Gulf of America	Red snapper	No	No—Rebuilding (Year 19 of 28)	3,252	6,381	Yes	Yes (IFQ)

Diving - SAFMC

Moderately Effective

See the South Atlantic vertical line reef fish fishery for a full account. For the dive fishery, five of the eight (63%) main retained stocks have appropriate reference points defined, and all have annual catch limits in place (though some are at the complex level). One stock is considered overfished with overfishing still occurring (gag), and two are rebuilding (see Supplementary Information, Table 6). Overall, the management strategy implemented by the SAFMC for snappers, groupers, and other reef fishes is deliberate and appropriate for

the species. But because management appears insufficient to prevent overfishing of some stocks, management strategy and implementation for the SAFMC dive reef fish fishery is considered "moderately effective."

Supplementary Information

Table 6: Status, landings, reference points and ACLs for the main retained species in the dive snapper-grouper fishery in the South Atlantic. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level. Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). Most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Snapper-Grouper FMP of the South Atlantic Region, except black grouper, which is comanaged with the GFMC under the Snapper-Grouper FMP of the South Atlantic Region and the Reef Fish Resources FMP of the Gulf Region.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast	Gag	Yes	Yes (Year 1 of 10)	51	38	Yes	Yes
Southern Atlantic Coast	Greater amberjack	No	No	103	325	Yes	Yes
Carolinas	Hogfish	Unknown	Unknown	6	22	No	Yes
Florida Keys/East Florida		No	Yes (Year 8 of 10)			Yes	Yes
Southern Atlantic Coast	Red grouper	No	Yes (Year 5 of 9)	3	53	Yes	Yes
South Atlantic Shallow Water Snapper-Grouper Complex	Yellowmouth grouper	Unknown	Unknown	3		No	Yes (complex)

South Atlantic Snappers Complex	Gray snapper	Unknown	Unknown	6	929	No	Yes (complex)
Southern Atlantic Coast/Gulf of America	Black grouper	No	No	2/31	38 (Gulf)	Yes	Yes

Set longlines - GFMC

Moderately Effective

See the Gulf of Mexico vertical line reef fish fishery answer for a full account. For this fishery, 5 of the 10 (50%) main retained stocks have appropriate reference points defined, and all have annual catch limits in place (see Supplementary Information, Table 7). Two stocks are considered overfished (gag and greater amberjack). Overall, the management strategy implemented by the GFMC for snappers, groupers, and other reef fishes is deliberate and appropriate for the species. But because management appears insufficient to prevent overfishing of some stocks and has not defined appropriate reference points for > 70% of the main species, management strategy and implementation for the GFMC set longline reef fish fishery is considered "moderately effective."

Supplementary Information

Table 7: Status, landings, reference points, and ACLs for the main retained species in the set longline reef fish fishery in the Gulf of Mexico. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level, and are not separated by commercial vs. recreational catch in the Gulf (referred to in the table as "joint"). Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). Most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Reef Fish Resources FMP of the Gulf of America, except red porgy, which is not covered by any federal FMP in the Gulf.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (all fisheries) (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Gulf of America	Gag	No	Yes	331	1,395	Yes	Yes (IFQ)

Gulf of America	Greater amberjack	No	Yes (Year 7 of 10)	175	398	Yes	Yes
Gulf of America	Red grouper	No	No	1,203	1,430	Yes	Yes (IFQ)
Gulf of America	Red snapper	No	No– Rebuilding (Year 19 of 28)	3,252	6,381	Yes	Yes (IFQ)
Gulf of America Deep Water Grouper Complex	Snowy grouper	No	Unknown	41	1	No	Yes (Complex IFQ, joint)
	Speckled hind			11		No	
	Yellowedge grouper	No	No	220	3	Yes (B only)	
Gulf of America Shallow Water Grouper Complex	Scamp	Unknown (though a recent stock assessment suggests not; see Criterion 1)	Unknown (though a recent stock assessment suggests not; see Criterion 1)	334	722	No	Yes (Complex IFQ, joint)
Gulf of America Tilefishes Complex	Blueline tilefish	No	Unknown	279	64	No	Yes (Complex IFQ)
	Blue/Golden tilefish	No	No	690	174	No	

Set longlines - SAFMC

Moderately Effective

See the South Atlantic vertical line snapper-grouper fishery answer for a full account. For the bottom longline fishery, four of the five (80%) main retained stocks have appropriate reference points defined, and all have annual catch limits in place (see Supplementary Information, Table 8). Two stocks are considered overfished (red grouper and snowy grouper), and one is also undergoing overfishing (snowy grouper). Overall, the management strategy implemented by the SAFMC for snappers, groupers, and other reef fishes is deliberate and appropriate for the species. But because management appears insufficient to prevent overfishing of some stocks, management strategy and

implementation for the SAFMC bottom longline snapper-grouper fishery is considered "moderately effective."

Supplementary Information

Table 8: Status, landings, reference points, and ACLs for the main retained species in the bottom longline snapper-grouper fishery in the South Atlantic. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level. Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Snapper-Grouper FMP of the South Atlantic Region.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (all fisheries) (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast	Greater amberjack	No	No	103	325	Yes	Yes
Southern Atlantic Coast	Red grouper	No	Yes (Year 5 of 9)	3	53	Yes	Yes
Southern Atlantic Coast	Snowy grouper	Yes	Yes (Year 18 of 34)	39	8	Yes	Yes
South Atlantic Deepwater Snapper-Grouper Complex	Yellowedge grouper	Unknown	Unknown	3		No	Yes (complex)
Southern Atlantic Coast	Blueline tilefish	No	No	214	594	Yes	Yes

Set longlines - SAFMC - Golden tilefish fishery

Highly effective

See the South Atlantic vertical line reef fish fishery for a full account. The only main retained species in this fishery is blue/golden tilefish, a stock that has appropriate reference points defined and an annual catch limit in place (see Supplementary

Information, Table 9). Overall, the management strategy implemented by the SAFMC for this fishery is considered "highly effective."

Supplementary Information

Table 9: Status, landings, reference points and ACLs for the main retained species in the bottom longline fishery targeting blue/golden tilefish in the South Atlantic (yellowtail snapper is the only main retained species in this fishery). Commercial landings are for all commercial fisheries combined. ACL are at the stock level and are not separated by commercial vs. recreational catch in the Gulf (referred to in the table as "joint"). Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on yellowtail snapper are comanaged by the SAFMC and GFMC under the Snapper-Grouper FMP of the South Atlantic Region and the Reef Fish Resources FMP of the Gulf.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings all fisheries (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast	Blue/golden tilefish	No	No	485	150	Yes	Yes

Vertical lines - GFMC

Moderately Effective

The GAFMC began managing snapper species fisheries in 1984, with the development of the Reef Fish Resources of the Gulf of Mexico Fishery Management Plan (FMP). The original FMP and a comprehensive list of all amendments, along with a summary of each, is available on the GFMC website (GMFMC 2023). Management regulations—for all species—include size limits, effort controls, and season and area closures. The IFQ program has been one of the major management developments for the reef fish fishery, and it was implemented to minimize overcapacity and to achieve and maintain optimum yield in the fishery (GMFMC 2008). The IFQ program helps to manage the risk of overfishing in the commercial reef fish fishery using a variety of management tools (GMFMC 2017). A review of the red snapper IFQ program continues to see improvement in reaching its major goals, particularly by reducing overcapacity, the "race to fish," fishing mortality, discard rates, and improving compliance (NMFS 2020a). Previous concerns of discard mortality and socioeconomic issues seem to have improved from 2018 to 2019, with a decrease of 11% in mortality and a price increase of over $4 per pound (NMFS 2020a).

With the approval of Amendment 48 to the FMP in March 2022 (GMFMC 2022), biomass and fishing mortality reference points have been determined for six of the eight main stocks or stock complexes that are typically retained in the vertical line fishery (see Supplementary Information, Table 10). Catch limits (ACLs) have been defined for seven of them (though some are defined at the species complex level), except for red porgy.

Two stocks are considered overfished (gag and greater amberjack). Once a stock has been determined to be overfished, managers must develop and implement a rebuilding plan for the stock that allows it to rebuild to target levels in a reasonable timeframe. The effectiveness of these plans varies, with red grouper and gag having been rebuilt in 2007, 2008, and 2014, respectively (though gag is considered overfished again) (NOAA 2025), and others now on their second or even third plan because the first plan failed to rebuild the stock. Examples of the latter include greater amberjack (first plan implemented in 2003, now on third plan), and red snapper (first plan implemented in 1990, now on second rebuilding plan) (NOAA 2025).

Overall, the management strategy implemented by the GFMC for snappers, groupers, and other reef fish is deliberate and appropriate for the species. But because management appears insufficient to prevent overfishing or to ensure rebuilding in a reasonable timeframe of some stocks, management strategy and implementation for the GAFMC vertical line reef fish fishery is considered "moderately effective."

Supplementary Information

To be considered "highly effective," management strategy and implementation must meet six criteria (for native species) (Seafood Watch Standard for Fisheries v4). These are addressed as follows:

1. For more than 70% of the fishery's main targeted and retained native species/stocks (by number), appropriate management/conservation targets have been defined (e.g., reference points).

> Table 10 lists the main retained stocks in the Gulf vertical line fishery. Most (7/8 = 88%) are included in the Reef Fish Resources of the Gulf of America Fishery Management Plan (except red porgy). For most species assessed in the reef fish fisheries, data do not allow for an accurate determination of MSY, so approximates or proxies are used. In the Gulf of Mexico, these are frequently based on spawning potential ratio (SPR), which approximates the comparison of the eggs produced by a fished population to the eggs produced by an unfished one. The current reference points used for Gulf reef fish are as follows (GMFMC 2022):

- Biomass/abundance: TRPs are the biomass at MSY for red snapper, $B_{40\%SPR}$ for goliath grouper, B_{MAX} (the biomass level that produces maximum yield-per-recruit) for gag, $B_{26\%SPR}$ for gray snapper, and $B_{30\%SPR}$ for the other reef fish species. LRPs are 50% of the TRP for red snapper, gag, red grouper, vermilion

snapper, gray triggerfish, greater amberjack, hogfish, and gray snapper, and 75% for all other species.

- Fishing mortality: F_{MSY} is based on the preceding SPRs (i.e., primarily $F_{30\%SPR}$)

Of the main retained stocks in this fishery, six of the eight (75%) have appropriate reference points defined (see Table 10).

2. More than 70% of the fishery's main targeted and retained native species/stocks (by number) have precautionary policies in place; these are based on scientific advice and incorporate uncertainty and environmental variability; they are characteristic of flexible and resilient fisheries management, are risk averse, include regulations to control fishing mortality over the full extent of the stock, prevent localized depletions, and respond to the state of the stock within appropriate timeframes.

Most (7/8 = 88%) of the main targeted/retained stocks (in some cases at the complex level) have annual catch limits in place that are designed to minimize the chances of overfishing and to account for scientific and management uncertainty.

3. Effective strategies are in place for targeted/retained, overfished, depleted, endangered, or threatened species that will allow for recovery with a high likelihood of success in an appropriate timeframe.

A number of Gulf reef fish stocks are considered overfished and/or undergoing overfishing (see Table 10) [reference is NOAA FSSI (NOAA 2025) unless otherwise noted]:

- **Gag** is considered overfished and subject to overfishing in the latest stock assessment (SEDAR 72, 2021). The stock was considered overfished from 2009 to 2013, rebuilding through 2021, and again overfished since. It has fluctuated between being subject to overfishing and not being subject to it multiple times since 2000. To end overfishing, Reef Fish Amendment 56 will modify status determination criteria, catch limits, sector allocations, and the recreational fishing season for gag. Interim measures to reduce mortality were also implemented by NOAA while the Amendment was in development (the final rule became effective June 1, 2024). Fishing mortality has since dropped below the overfishing threshold, and the stock has been considered not subject to overfishing by NOAA since Q2 2025.
- **Greater amberjack** is considered overfished and subject to overfishing in the latest stock assessment (SEDAR 70, 2021). The stock has been considered overfished since 2001, and is now on its third rebuilding plan. It has been fluctuating between being subject to overfishing and not multiple times since 2001. Reef Fish Amendment 54 modifies greater amberjack catch limits to immediately end overfishing and achieve the (third) rebuilding plan goals by 2027. The regulations became effective in June 2023. Fishing mortality has since dropped below the overfishing threshold, and the stock has been considered not subject to overfishing

by NOAA since Q2 2025.

- **Lane snapper** has been subject to overfishing since Q4 2023. The **Jacks Complex** has been in and out of "subject to overfishing" since a determination was first made in 2013. Since Q4 2023, it has been not subject to overfishing. The complex contains almaco jack, banded rudderfish, and lesser amberjack. None of these is currently considered a main retained species when the complex is not undergoing overfishing.
- The **Mid-Water Snapper Complex** was subject to overfishing in 2022 through Q4 2023. It is not currently subject to overfishing. The complex currently contains blackfin snapper, queen snapper, silk snapper, and wenchman. Of these, only silk snapper is considered a main retained species (when the complex is not undergoing overfishing).
- **Red snapper** was considered overfished through 2017, and rebuilding since. The stock has not been subject to overfishing since 2012.
- **Other Gulf** reef fish stocks that have rebuilt in the last 20 years are red grouper (rebuilt in 2007) and yellowtail snapper (2003).

4. There is evidence that the strategy is being implemented successfully.

As noted and in Table 10, although some overfished stocks have been rebuilt, many have been in an overfished state for decades. Furthermore, managers have been challenged to reduce fishing mortality to sustainable levels for all species, with various stocks fluctuating between being subject to overfishing and not subject to overfishing.

5. Management is responsive to changes in stock productivity and/or biomass.

Management is responsive to assessment findings, such that rebuilding plans and catch limits are re-evaluated where they do not seem to be effective.

6. Harvest control rules include conservative buffers appropriate for the species (e.g., forage species) that are accepted without scientific controversy and are demonstrated to be effective.

Buffers for uncertainty are in place through the annual catch limit setting process.

Table 10: Status, landings, reference points and ACLs for the main retained species in the vertical line reef fish fishery in the Gulf of Mexico. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level, and are not separated by commercial vs. recreational catch in the Gulf (referred to in the table as "joint"). Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Reef Fish Resources FMP of the Gulf of Mexico except red porgy, which is not covered by any federal FMP in the Gulf.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (all fisheries) (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Gulf of America	Gag	No	Yes	331	1,395	Yes	Yes (IFQ)
Gulf of America	Greater amberjack	No	Yes (Year 7 of 10)	175	398	Yes	Yes
Gulf of America	Red grouper	No	No	1,203	1,430	Yes	Yes (IFQ)
Gulf of America	Red snapper	No	No—Rebuilding (Year 20 of 28)	3,252	6,381	Yes	Yes (IFQ)
Gulf of America	Vermilion snapper	No	No	378	1,093	Yes	Yes (joint)
Gulf of America Mid-Water Snapper Complex	Silk snapper	No	Unknown	16	1	No	Yes (complex, joint)

Gulf of America Shallow Water Grouper Complex	Scamp	Unknown	Unknown	55	138	Yes	Yes (Complex IFQ, joint)
	Red porgy	Not determined	Not determined	54	63	No	No

Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Highly effective

See the South Atlantic vertical line reef fish fishery for a full account. The only main retained species in this fishery is yellowtail snapper, a stock that has appropriate reference points defined and an annual catch limit in place (see Supplementary Information, Table 11). The stock was once overfished, but rebuilt in 2003 (NOAA 2025). Overall, management strategy implemented by the SAFMC for this fishery is considered "highly effective."

Supplementary Information

Table 11: Status, landings, reference points, and ACLs for the main retained species in the vertical line fishery targeting yellowtail snapper in the South Atlantic (yellowtail snapper is the only main retained species in this fishery). Commercial landings are for all commercial fisheries combined. ACL are at the stock level and is not separated by commercial vs. recreational catch in the Gulf (referred to in the table as "joint"). Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on yellowtail snapper are comanaged by the SAFMC and GFMC under the Snapper-Grouper FMP of the South Atlantic Region and the Reef Fish Resources FMP of the Gulf.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings all fisheries (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast/Gulf of America	Yellowtail snapper	No	No	6/713	233/750	Yes	Yes (SA)/Yes (Gulf joint)

Moderately Effective

The original South Atlantic Snapper-Grouper Fishery Management Plan (FMP) document, with a comprehensive list of all amendments as well as a summary of each, is available on the SAFMC website (SAFMC 2018a). The plan covers 55 species of snappers, groupers, and other taxa. In addition to laying out management measures for commercial fishing, the plan covers recreational fishing, which accounts for a far greater percentage of estimated landings for a number of stocks (see Supplementary Information). Management measures are in place for all species, including minimum sizes, effort control, and season and area closures. Biomass and fishing mortality reference points have been determined for over half the main stocks that are typically retained (see Table 12). Allowable catch limits (ACLs) have been defined for all of them (though some are defined at the species complex level).

Four stocks have concerning stock statuses, and two of those are still undergoing overfishing (gag and snowy grouper). Once a stock has been determined to be overfished, managers must develop and implement a rebuilding plan for the stock that allows it to rebuild to target levels in a reasonable timeframe. The effectiveness of these plans varies, with red porgy, red snapper, and snowy grouper in decades-long plans, and red grouper in a second plan after the first did not meet the rebuilding goals (NOAA 2022c; NOAA 2025). Plans are amended as necessary based on new information (e.g., see Supplementary Information, “Stocks of Concern”) (SAFMC 2023). Amendments generally take at least a couple of years to scope, approve, and implement [see Amendment summaries in (SAFMC 2018a)].

Overall, the management strategy implemented by the SAFMC for snappers, groupers, and other reef fishes is deliberate and appropriate for the species. But because management appears insufficient to prevent overfishing of some stocks and has not defined appropriate reference points for > 70% of the main species, management strategy and implementation for the SAFMC vertical line reef fish fishery is considered “moderately effective.”

Supplementary Information

To be considered “highly effective,” management strategy and implementation must meet six criteria (for native species) (Seafood Watch Standard for Fisheries v4). These are addressed as follows:

1. For more than 70% of the fishery’s main targeted and retained native species/stocks (by number), appropriate management/conservation targets have been defined (e.g., reference points).

The main targeted/retained stocks in the fishery (all gears) are listed in Table 12. All

are included in the Snapper-Grouper Fishery of the South Atlantic Region Fishery Management Plan (and the Reef Fish Resources of the Gulf of America where comanaged with the Gulf Fishery Management Council). Over half (8/13 species or 62%) have appropriate biomass or fishing mortality reference points.

2. More than 70% of the fishery's main targeted and retained native species/stocks (by number) have precautionary policies in place; these are based on scientific advice and incorporate uncertainty and environmental variability; they are characteristic of flexible and resilient fisheries management, are risk averse, include regulations to control fishing mortality over the full extent of the stock, prevent localized depletions, and respond to the state of the stock within appropriate timeframes.

All the main targeted/retained stocks have annual catch limits in place that are designed to minimize the chances of overfishing and account for scientific and management uncertainty (the annual catch limit for a number of stocks is set at the complex level). The process by which the OFL, ABC, ACL, and ACT is set for each stock or complex received an overhaul with the approval of Amendment 45 to the FMP in February 2024 (SAFMC 2023c; Federal Register 2024).

3. Effective strategies are in place for targeted/retained, overfished, depleted, endangered, or threatened species that will allow for recovery with a high likelihood of success in an appropriate timeframe.

A number of the main targeted/retained South Atlantic reef fish stocks are considered overfished and/or undergoing overfishing (Table 12).

- **Red snapper** is considered overfished and subject to overfishing in the latest stock assessment (SEDAR 73, 2021), mainly from discard mortality (SAFMC 2018a). The stock has been considered overfished and subject to overfishing for at least 20 years (NOAA 2025). Snapper-Grouper Amendment 35 would consider changes to reduce release mortality in the snapper-grouper fishery more generally, and a possible change to the ABC for red snapper.
- **Gag** is considered overfished and subject to overfishing in the latest stock assessment (SEDAR 71, 2021). Snapper-Grouper Amendment 53 would establish a rebuilding plan and adjust catch levels, sector allocations, management measures for the commercial and recreational sectors, and accountability measures.
- **Snowy grouper** is considered overfished and subject to overfishing in the latest stock assessment (SEDAR 36 Update, 2021). The stock has been overfished for at least 20 years; overfishing ceased in 2014 but restarted in 2021 (NOAA 2025). Snapper-Grouper Amendment 55 would adopt recommended ABC and adjust total ACL, annual OY, and sector allocations (and sector ACLs), and consider modifications to management measures and recreational AMs.
- **Red porgy** is overfished and subject to overfishing in the latest stock assessment (SEDAR 60, 2020). The stock has been overfished for at least 20 years; overfishing ceased in 2001, restarted in 2021, and stopped again in 2021 (NOAA 2025).

Snapper-Grouper Amendment 50 established a rebuilding plan and revised annual catch limits (ACL), sector allocations, management measures for the commercial and recreational sectors, and accountability measures (AM) for the recreational sector. This Amendment is complete, with new regulations effective January 19, 2023.

- **Red grouper** is overfished and subject to overfishing in the latest stock assessment (SEDAR 53, 2017), despite the rebuilding already in place through Snapper Grouper Amendment 30. The stock was overfished in 2010–12, then again in 2017; it was subject to overfishing from at least 2000 through 2013, again in 2017–18, then again in 2019–20, and then not subject to overfishing until the latest stock assessment (NOAA 2025). Snapper-Grouper Amendment 30 established a second rebuilding plan, commercial trip limits, and spawning season closure in NC and SC. This Amendment is complete, with new regulations effective in 2019.

4. There is evidence that the strategy is being implemented successfully.

As noted, although some overfished stocks have been rebuilt (e.g., yellowtail snapper), many have been in an overfished state for decades. Furthermore, managers have been challenged to reduce fishing mortality to sustainable levels for all species, and overfishing remains an issue for a number of stocks.

5. Management is responsive to changes in stock productivity and/or biomass.

Management is responsive to assessment findings, such that rebuilding plans and catch limits are reevaluated where they do not seem to be effective.

6. Harvest control rules include conservative buffers appropriate for the species (e.g., forage species) that are accepted without scientific controversy and are demonstrated to be effective.

Buffers for uncertainty are in place through the annual catch limit setting process.

Table 12: Status, landings, reference points, and ACLs for the main retained species in the vertical line snapper-grouper fishery in the South Atlantic. Commercial landings are for all commercial fisheries combined. Commercial and recreational landings are limited to nonconfidential data only, so an empty cell does not necessarily mean there were no landings. ACLs are at the stock or complex level. Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on all species are managed under the Snapper-Grouper FMP of the South Atlantic Region.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings (all fisheries) (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast	Gag	Yes	Yes (Year 1 of 10)	51	38	Yes	Yes
Southern Atlantic Coast	Gray triggerfish	No	Unknown	51	341	No	Yes
Southern Atlantic Coast	Greater amberjack	No	No	103	325	Yes	Yes
Southern Atlantic Coast	Red grouper	No	Yes (Year 5 of 9)	3	53	Yes	Yes
Southern Atlantic Coast	Red porgy	No	Yes (Year 3 of 26)	14	8	Yes	Yes
Southern Atlantic Coast	Red snapper	Yes	Yes (Year 14 of 35)	35	529	Yes	Yes
Southern Atlantic Coast	Scamp	No	Unknown	6	1	No	Yes
Southern Atlantic Coast	Snowy grouper	Yes	Yes (Year 18 of 34)	39	8	Yes	Yes
Southern Atlantic Coast	Vermilion snapper	No	No	157	258	Yes	Yes
South Atlantic Deepwater Snapper-Grouper Complex	Silk snapper	Unknown	Unknown	20	1	No	Yes (complex)
	Yellowedge grouper			3		No	
South Atlantic Jacks Complex	Almaco jack	Unknown	Unknown	37	167	No	Yes (complex)
Southern Atlantic Coast	Blueline tilefish	No	No	214	594	Yes	Yes

Vertical lines - SAFMC - Wreckfish (target)

Highly effective

See the South Atlantic vertical line reef fish fishery for a full account. The only main retained species in this fishery is wreckfish, a stock that has appropriate reference points defined and an annual catch limit in place (see Supplementary Information, Table 13). Overall, the management strategy implemented by the SAFMC for this fishery is considered "highly effective."

Supplementary Information

Table 13: Status, landings, reference points, and ACLs for the main retained species in the vertical line fishery targeting wreckfish in the South Atlantic (wreckfish is the only main retained species in this fishery). Landings are confidential due to the small size of the fishery. Sources: FMP, stock/complex, whether considered overfished or subject to overfishing by NOAA, and rebuilding plan progress from NOAA FSSI (NOAA 2025). Commercial and recreational landings from NOAA FOSS (NOAA 2023). The most recent stock assessment and reference points from NOAA StockSmart (NOAA Fisheries 2025). ACLs from the Southeast Region Annual Catch Limit (ACL) Monitoring program (NOAA 2022). Fishing impacts on wreckfish are managed under the Snapper-Grouper FMP of the South Atlantic Region.

Stock/Complex	Species	Overfishing	Overfished (rebuilding plan)	Commercial landings all fisheries (mt)	Recreational landings (mt)	B and F reference points	Commercial ACL
Southern Atlantic Coast	Wreckfish	No	No			Yes	Yes

3.2 Bycatch Strategy

Diving - GFMC

Diving - SAFMC

Highly effective

Diving is considered a selective fishery with no significant mortality of any species other than those that are retained. Therefore, bycatch strategy is rated "highly effective" (5).

Set longlines - SAFMC - Golden tilefish fishery

Highly effective

There are no other main species caught in the SAFMC bottom longline fishery targeting blue/golden tilefish. Therefore, bycatch strategy in the fishery is rated “highly effective” (5).

Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Highly effective

Yellowtail snapper accounts for most of the catch of the vertical line fishery in the South Atlantic targeting that species (see Criterion 2 Summary). Of the other species caught alongside yellowtail snapper, most are generally retained (e.g., blue runner, little tunny, bar jack, rainbow runner, yellow jack), but none is of any particular concern and fishing mortality for nearly all is dominated by the recreational fishery (see Criterion 2 Summary). There are no known serious issues with the incidental catch of turtles, mammals, or seabirds. Bycatch management in this fishery meets the conditions to be “highly effective” (5).

Vertical lines - SAFMC - Wreckfish (target)

Highly effective

There are no other main species caught in the SAFMC vertical line fishery targeting wreckfish. Therefore, bycatch management in the fishery is “highly effective” (5).

Vertical lines - SAFMC

Set longlines - GFMC

Vertical lines - GFMC

Set longlines - SAFMC

Moderately Effective

Except for the yellowtail snapper, wreckfish, and South Atlantic blue/golden tilefish fisheries, the South Atlantic and Gulf snapper-grouper/reef fish fisheries using vertical line and bottom longline are not considered “highly selective” because discards/landings is greater than 5% (see Appendix C, Tables 29–31, Grand Totals). Most main species are typically retained, but a number are discarded in relatively high volumes:

- South Atlantic vertical line: greater amberjack (discards/retained = 18.8%), red snapper (44.9%), red porgy (22.8%), and gag (13.1%).
- South Atlantic bottom longline: red grouper (discards/retained = 59.4%) (in terms of individual fish, more red grouper are discarded than kept).
- Gulf vertical line: red grouper (discards/retained = 20.1%), greater amberjack

(58.6%), and gag (8.8%).
- Gulf bottom longline: greater amberjack (discards/retained = 134.3%), red snapper (15.6%), red grouper (30.3%), and blueline tilefish (34.3%).

Most of these discards are dead (Appendix C, Tables 29–31), and many are species of concern (e.g., red snapper, red porgy, gag in the South Atlantic, greater amberjack, gag grouper in the Gulf). Significant effort is being made to reduce the mortality of these species in both the South Atlantic snapper-grouper fishery and the Gulf reef fish fishery. Most species have established appropriate reference points and ACLs, and there are requirements to reduce bycatch and improve the survival of discarded fish through the use of descending devices to reduce barotrauma and circle hooks to reduce internal hooking (Amendment 29 to the Snapper-Grouper FMP; Amendment 48/50 to the Gulf of Mexico Reef Fish FMP). Landing is prohibited for some species of concern included in the South Atlantic Snapper-Grouper and Gulf Reef Fish FMPs (speckled hind, Warsaw grouper, goliath grouper, Nassau grouper).

There are no known major concerns with endangered, threatened, or protected species such as turtles, seabirds, or marine mammals (see Criterion 2; but see also factor 3.3: the quite low level of observer coverage makes understanding any impacts difficult). Landing of the endangered smalltooth sawfish is also prohibited, and fishers must comply with safe release protocols for the species. Similar safe release requirements are in place for any turtles caught (Amendments 18A and 49 to the Gulf Reef Fish FMP; Amendments 15b, 23 and 42 to the South Atlantic Snapper Grouper FMP: https://www.fisheries.noaa.gov/southeast/resources-fishing/frequently-asked-questions-release-protocols-endangered-species-act).

In short, managing the impacts of fishing on the many different species caught in these fisheries is clearly challenging, and solid efforts are in place to understand and mitigate unsustainable impacts. But some species that are frequently discarded are still undergoing overfishing and/or are overfished, which suggests that extra efforts may be necessary to ensure that efforts are highly effective. Therefore, bycatch management in the fishery is deemed “moderately effective” (4).

3.3 Scientific Data Collection and Analysis

Diving - GFMC

Highly effective

In the dive fishery in the Gulf, all retained species have recent assessments (i.e., < 10 years old; see Supplementary Information, Table 14) and there is no need for the collection of data relating to discards (it is assumed to be a highly selective fishery). Therefore, scientific data collection and analysis is scored “highly effective” (5).

Supplementary Information

Table 14: Date of most recent stock assessment for the main retained and discarded finfish species in the Gulf of Mexico reef fish dive fishery.

Species	Most recent stock assessment
Gag	2021
Gray snapper	2018
Greater amberjack	2021
Red grouper	2022
Red snapper	2021

Diving - SAFMC

Highly effective

In the dive fishery in the South Atlantic, most retained species have recent assessments (i.e., < 10 years old; see Supplementary Information, Table 15) and there is no need for the collection of data for discards (it is assumed to be a highly selective fishery). Therefore, scientific data collection and analysis is rated “highly effective” (5).

Supplementary Information

Table 15: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper dive fishery.

Species	Most recent stock assessment
Gag	2021
Greater amberjack	2020
Hogfish (Florida Keys/East Florida)	2014
Hogfish (Carolinas)	2014
Red grouper	2017
Yellowmouth grouper	None
Gray snapper	None
Black grouper	2010

Set longlines - GFMC

Moderately Effective

See the account under the Gulf vertical line fishery. Recent stock assessments are available for most of the main retained stocks in this fishery, but there are a number of main species for which stock assessments have not been conducted or are too old (> 10 years old) (see Supplementary Information, Table 16). Some information is collected through observer programs, and preliminary data are made publicly available, but observer coverage is still quite low. For these reasons, the Gulf reef fish bottom longline fishery receives a score of "moderately effective" (4) for scientific research and monitoring.

Supplementary Information

Table 16: Date of most recent stock assessment for the main retained and discarded finfish species in the Gulf reef fish set longline fishery.

Species	Most recent stock assessment
Gag	2021
Greater amberjack	2021
Red grouper	2022
Red snapper	2021
Snowy grouper	None
Speckled hind	None
Yellowedge grouper	2010
Scamp	2022
Blueline tilefish	None
Blue/Golden tilefish	2011

Set longlines - SAFMC

Highly effective

See the account under the South Atlantic vertical line fishery. Recent stock assessments are available for most of the main retained stocks in this fishery (see Supplementary Information, Table 17). Some information is collected through observer programs, and preliminary data are made publicly available, but observer coverage is still quite low. Nonetheless, the South Atlantic snapper-grouper bottom longline fishery for snapper-grouper meets the requirements for a score of "highly effective" (5) for scientific research and monitoring.

Supplementary Information

Table 17: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper bottom longline fishery.

Species	Most recent stock assessment
Greater amberjack	2020
Red grouper	2017
Snowy grouper	2021
Yellowedge grouper	None
Blueline tilefish	2025

Set longlines - SAFMC - Golden tilefish fishery

Highly effective

See the account under the South Atlantic vertical line fishery. A recent stock assessment is available for blue/golden tilefish (see Supplementary Information, Table 18), which is the only main species retained in this targeted fishery (see Criterion 2). Some bycatch information is collected, and preliminary data are available. For these reasons, the South Atlantic snapper-grouper bottom longline fishery targeting blue/golden tilefish receives a score of “highly effective” (5) for scientific research and monitoring.

Supplementary Information

Table 18: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper bottom longline fishery when targeting blue/golden tilefish.

Species	Most recent stock assessment
Blue/golden tilefish	2024

Vertical lines - GFMC

Moderately Effective

Harvest information is collected for all species in the GFMC reef fish fishery through the Southeast Fishery Science Center (SEFSC) Coastal Fisheries Logbook program (NMFS SEFSC 2017a). This mandatory program was initiated in 1990 to quantify harvest in the fishery. In addition, biological samples are collected from the fishery through the SEFSC Trip Interview Program (NMFS SEFSC 2017b). Harvest information and biological data

are key components in stock assessments. Further, annual harvest levels are set using harvest control rules and accountability measures established by the GFMC to minimize the risk of overfishing and allow rebuilding of overfished stocks (GMFMC 2011).

Bycatch monitoring in the Gulf program is conducted using both a logbook program and an observer program. A supplementary form in the Coastal Fishery Logbook Program (NMFS SEFSC 2017a) collects information on discards from a subset of fishers in the Gulf reef fish fishery. In addition, Amendment 22 to the Reef Fish FMP (GMFMC 2004) approved an observer program in the Gulf of Mexico reef fish fishery. The program was implemented in July 2006 (Scott-Denton et al. 2011) and has been running ever since. Data summaries (Scott-Denton et al. 2011; Scott-Denton & Williams 2013) provide information on species composition and fish condition for multiple dispositions (harvest, discard alive, discard dead, bait, and unknown). No estimate of the observer coverage in this fishery was found during this Seafood Watch assessment. Commercial fisheries data have also been collected at the individual trip level through Trip Interview Program fisher surveys since the 1980s (more information: https://www.fisheries.noaa.gov/southeast/population-assessments/trip-interview-program; recent dataset summarized in Appendix A).

Recent stock assessments are available for most of the main retained stocks in this fishery, but there are a number of main species for which stock assessments have not been conducted or are too old (> 10 years old) (see Supplementary Information, Table 19). Some information is collected through observer programs, and preliminary data are made publicly available, but observer coverage is still quite low. For these reasons, the Gulf reef fish vertical line fishery receives a score of “moderately effective” (4) for scientific research and monitoring.

Supplementary Information

Table 19: Date of most recent stock assessment for the main retained and discarded finfish species in the Gulf vertical line fishery.

Species	Most recent stock assessment
Gag	2021
Greater amberjack	2021
Red grouper	2022
Red snapper	2021
Vermilion snapper	2020
Silk snapper	None (Caribbean only)
Scamp	2022
Red porgy	None

Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Highly effective

See the account under the South Atlantic vertical line fishery. A recent stock assessment is available for yellowtail snapper (see Supplementary Information, Table 20), which is the only main species retained in this targeted fishery (see Criterion 2). Some bycatch information is collected, and preliminary data are available. For these reasons, the South Atlantic snapper-grouper vertical line fishery targeting yellowtail snapper receives a score of “highly effective” (5) for scientific research and monitoring.

Supplementary Information

Table 20: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper vertical line fishery when targeting yellowtail snapper.

Species	Most recent stock assessment
Yellowtail snapper	2025

Vertical lines - SAFMC

Moderately Effective

Harvest information is collected for all species in the SAFMC snapper-grouper fishery through the Southeast Fishery Science Center (SEFSC) Coastal Fisheries Logbook program (NMFS SEFSC 2017a). This mandatory program was initiated in 1992 to quantify harvest in the fishery. In addition, biological samples are collected from the fishery through the SEFSC Trip Interview Program (NMFS SEFSC 2017b). Harvest information and biological data are key components in stock assessments. Further, annual harvest levels are set using harvest control rules and accountability measures established by the SAFMC to minimize the risk of overfishing and allow rebuilding of overfished stocks (SAFMC 2011).

The fishery has had limited observer coverage historically (Mathers, A.N. et al 2021). This changed in 2018 and again in July 2022, when observer coverage was increased in this fishery by 550 sea days over the year (the program is expected to increase coverage from 1% to 2.76% for all gear types) (SAFMC 2022b; SAFMC 2022c). But coverage remains low, primarily from low compliance (failure to contact the SEFSC after receiving their selection letter, failure to notify the SEFSC when making a fishing trip) (NOAA 2021r; Mathers, A.N. et al 2021). The results from that program are currently preliminary (Mathers, A.N. et al 2021). Information on discards is also collected from a rotating subset of fishers through the Coastal Fisheries Logbook program (NMFS SEFSC 2017a). Commercial fisheries data have also been collected at the individual trip level through Trip Interview Program fisher surveys since the 1980s (more information:

https://www.fisheries.noaa.gov/southeast/population-assessments/trip-interview-program; recent dataset summarized in Appendix A).

Recent stock assessments are available for many of the main retained stocks in this fishery, but there are a number of main species for which stock assessments have not been conducted or are too old (> 10 years old) (see Supplementary Information, Table 21). Some information is collected through observer programs, and preliminary data are made publicly available, but observer coverage is still quite low. For these reasons, the South Atlantic snapper-grouper vertical line fishery receives a score of "moderately effective" (4) for scientific research and monitoring.

Supplementary Information

Table 21: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper vertical line fishery.

Species	Most recent stock assessment
Gag	2021
Gray triggerfish	2016
Greater amberjack	2020
Red grouper	2017
Red porgy	2020
Red snapper	2021
Scamp	2022
Snowy grouper	2021
Vermilion snapper	2018
Silk snapper	None (Caribbean only)
Yellowedge grouper	None
Almaco jack	None
Blueline tilefish	2025

Vertical lines - SAFMC - Wreckfish (target)

Moderately Effective

See the account under the South Atlantic vertical line fishery. There is no recent stock assessment for wreckfish (see Supplementary Information, Table 22). Some bycatch information is collected, and preliminary data are available. For these reasons, the South Atlantic snapper-grouper vertical line fishery targeting wreckfish receives a score of "moderately effective" (4) for scientific research and monitoring.

Supplementary Information

Table 22: Date of most recent stock assessment for the main retained and discarded finfish species in the South Atlantic snapper-grouper vertical line fishery when targeting wreckfish.

Species	Most recent stock assessment
Wreckfish	2014

3.4 Enforcement of and Compliance with Management Regulations

Diving - GFMC

Set longlines - GFMC

Vertical lines - GFMC

Moderately Effective

Enforcement of fishery management measures in federal waters or for federally permitted harvesters or dealers is under the purview of the NOAA Office of Law Enforcement (OLE), with established partnerships with state agencies, the U.S. Coast Guard, and other entities (NOAA Office of Law Enforcement 2017a). The OLE Southeastern Division, which comprises the 8 coastal states from North Carolina to Texas, plus Puerto Rico and the U.S. Virgin Islands, is monitored by 34 full-time enforcement agents (NOAA Office of Law Enforcement 2017b). Priorities for the Southeastern Division include: monitoring of closed areas and seasons, dealer misreporting of overfished species, and tracking of IFQ species harvest (NOAA Office of Law Enforcement 2017c).

Since 1990, the SEFSC Coastal Fishery Logbook program requires mandatory harvest reporting for all participants in the GAFMC reef fish fishery. Compliance is tracked by SEFSC, and failure to report information, or falsification of information, is subject to civil or criminal penalties (NMFS 2016a). Amendment 18A (GMFMC 2005) requires all vessels in the reef fish fishery to be equipped with an onboard vessel monitoring system (VMS) to assist with monitoring of closed area regulations. Landings of IFQ-managed species are required to be reported through the IFQ reporting system, and IFQ dealers have been required to submit electronic dealer reports since 2010. This expanded to all federally

permitted dealers in 2014 (NMFS 2017a). No information is available on reporting compliance rate for these programs. The IFQ program also includes other regulations to assist with law enforcement, such as notifying NMFS before leaving and before returning to port, tracking of vessels using VMS, and restricting offload to certain hours (NMFS 2016b).

Enforcement priorities are established and reviewed on a regular basis for the OLE Southeastern Division, which includes the Gulf of Mexico. Appropriate monitoring measures are in place for all management requirements, such as harvest limits and closed areas, but overall compliance rates are unknown. For these reasons, enforcement of and compliance with management regulations in the Gulf of Mexico reef fish vertical line fisheries receives a score of “moderately effective” (4).

Vertical lines - SAFMC

Diving - SAFMC

Set longlines - SAFMC - Golden tilefish fishery

Set longlines - SAFMC

Vertical lines - SAFMC - Wreckfish (target)

Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Moderately Effective

Enforcement of fishery management measures in federal waters or for federally permitted harvesters or dealers is under the purview of the NOAA Office of Law Enforcement (OLE), with established partnerships with state agencies, the U.S. Coast Guard, and other entities (NOAA Office of Law Enforcement 2017a). The OLE Southeastern Division, which comprises the 8 coastal states from North Carolina to Texas, plus Puerto Rico and the U.S. Virgin Islands, is monitored by 34 full-time enforcement agents (NOAA Office of Law Enforcement 2017b). Priorities for the southeastern division include: monitoring of closed areas and seasons, dealer misreporting of overfished species, and tracking of IFQ species harvest (NOAA Office of Law Enforcement 2017c).

Since 1992, the SEFSC Coastal Fishery Logbook program requires mandatory harvest reporting for all participants in the SAFMC snapper-grouper fishery. Compliance is tracked by SEFSC, and failure to report information, or falsification of information, is subject to civil or criminal penalties (NMFS 2016a). Beginning in 2014, commercial snapper-grouper dealers in the southeast region are required to report all purchases for these species electronically. No information is available on the reporting compliance rate for either of these programs. A pilot test of electronic logbooks was initiated for the South Atlantic and Gulf of Mexico in 2014, but is not specific to the snapper-grouper

fishery.

In 2010, a pilot program was conducted in the snapper-grouper vertical line fishery to evaluate the use of onboard electronic monitoring systems. The report found that EM provided reliable information on total catch (numbers of fish) and discards (number and species), but improvements to the system were needed to better capture overall species composition and size/age structure of the catch (Baker 2012). Amendment 30 to the Snapper-Grouper FMP proposed the requirement for vessel monitoring systems (VMS) on all snapper-grouper vessels to increase scientific monitoring and enforcement capabilities. In particular, the SAFMC noted that VMS would improve monitoring of closed areas. But Amendment 30 was never approved by SAFMC (SAFMC 2017), and VMS is not required for the snapper-grouper fishery.

Enforcement measures are in place, and enforcement priorities are established and reviewed on a regular basis. Appropriate monitoring measures are in place, but overall compliance rates are unknown. Methods to improve monitoring of closed areas—a Southeastern Division enforcement priority—were proposed but never implemented. For these reasons, enforcement of and compliance with management regulations in the South Atlantic snapper-grouper handline and longline fisheries receives a score of "moderately effective" (4).

3.5 Stakeholder Inclusion

All fisheries

Highly effective

Federal fishery management through the regional Councils is a cooperative process that involves agency (state, federal, and territorial) fishery management officials, commercial and recreational stakeholders, and other interested parties with sufficient knowledge of fisheries science and management (NMFS 2017b). National operational guidelines are established and reviewed regularly to guide the Councils on the development, implementation, and review of federal fishery regulations (NMFS 2017b). Each regional council expands on these through regional operating agreements (GMFMC 2016; SAFMC 2014). At the national level, one of the primary goals of the operational guidelines is to "Promote a timely, effective, and transparent public process for development of federal fishery management measures pursuant to the MSA" (NMFS 2017b). Objectives to achieve this transparency and public participation include: promoting public accessibility to the process, providing a constructive and effective public input process, and providing mechanisms for stakeholders to track progress of the decision-making process.

Adherence to these guidelines is apparent in several aspects of each of the Councils covered under this report. In addition to their required state and federal agency representatives, the SAFMC and GFMC have 8 and 11 voting members, respectively, who are selected from industry or other stakeholder organizations (NMFS 2017c). This

makeup ensures that industry and public input is incorporated into management decisions and allows an avenue to address user conflicts. Transparency is achieved through the Council websites (GMFMC 2017a; SAFMC 2017b), where all fishery management plans, as well as plan amendments (both completed and under development), are available to the public. Before final decision-making, the Council receives technical and stakeholder input through the Scientific and Statistical Committee and the species Advisory Panel (NMFS 2017c). The GFMC also has several ad-hoc advisory panels for certain key issues (GMFMC 2017a). With few exceptions, all council meetings are open to the public, with the agenda (and often all meeting materials) made publicly available before the meeting, and an opportunity for public comment during the meeting (NMFS 2017c). Councils must also allow public comment periods for any proposed regulations, including both written comments and in-person public hearings. Finally, following approval by a council, NMFS publishes draft regulations through the Federal Register, allowing an additional 60-day public comment period before final approval through NMFS (NMFS 2017c).

In addition to the management process through the Councils, the NMFS Southeast Regional Office (SERO) produces several products intended to improve stakeholder engagement and inclusion. These include fishery bulletins, IFQ annual reports, and a Catch Share newsletter, all of which can be found on the SERO website (sero.nmfs.noaa.gov).

The makeup of Council voting membership, transparency in the process, cooperation between managers, scientists, and user groups, and the numerous opportunities to incorporate public and stakeholder participation in the management process meet all the requirements for a score of “highly effective” (5) for stakeholder inclusion.

Criterion 4: Impacts on the Habitat and Ecosystem

This Criterion assesses the impact of the fishery on seafloor habitats, and increases that base score if there are measures in place to mitigate any impacts. The fishery's overall impact on the ecosystem and food web and the use of ecosystem-based fisheries management (EBFM) principles is also evaluated. Ecosystem Based Fisheries Management aims to consider the interconnections among species and all natural and human stressors on the environment. The final score is the geometric mean of the impact of fishing gear on habitat score (factor 4.1 + factor 4.2) and the Ecosystem Based Fishery Management score. The Criterion 4 rating is determined as follows:

- Score >3.2 = **Green** or Low concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate concern
- Score ≤2.2 = **Red** or High concern

Guiding principles

- Avoid negative impacts on the structure, function or associated biota of marine habitats where fishing occurs.
- Maintain the trophic role of all aquatic life.
- Do not result in harmful ecological changes such as reduction of dependent predator populations, trophic cascades, or phase shifts.
- Ensure that any enhancement activities and fishing activities on enhanced stocks do not negatively affect the diversity, abundance, productivity, or genetic integrity of wild stocks.
- Follow the principles of ecosystem-based fisheries management.

Rating cannot be Critical for Criterion 4.

Criterion 4 summary

Fishery	Physical Impact of Fishing Gear on the Habitat/Substrate	Modifying Factor: Mitigation of Gear Impacts	Ecosystem-based Fisheries Management	Score
Diving - GFMC	Score: 5	Score: 0	Moderate Concern	Green (3.873)
Set longlines - GFMC	Score: 2	Score: 0	Moderate Concern	Yellow (2.449)
Vertical lines - GFMC	Score: 4	Score: 0	Moderate Concern	Green (3.464)
Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)	Score: 4	Score: 0	Moderate Concern	Green (3.464)
Diving - SAFMC	Score: 5	Score: 0	Moderate Concern	Green (3.873)
Set longlines - SAFMC	Score: 2	Score: 0	Moderate Concern	Yellow (2.449)
Set longlines - SAFMC - Golden tilefish fishery	Score: 2	Score: 0	Moderate Concern	Yellow (2.449)
Vertical lines - SAFMC	Score: 4	Score: 0	Moderate Concern	Green (3.464)
Vertical lines - SAFMC - Wreckfish (target)	Score: 4	Score: 0	Moderate Concern	Green (3.464)

Criterion 4 Assessment

Scoring Guidelines

Factor 4.1 - Physical Impact of Fishing Gear on the Habitat/Substrate

Goal: The fishery does not adversely impact the physical structure of the ocean habitat, seafloor or associated biological communities.

- *5 - Fishing gear does not contact the bottom*
- *4 - Vertical line gear*
- *3 - Gears that contacts the bottom, but is not dragged along the bottom (e.g. gillnet, bottom longline, trap) and is not fished on sensitive habitats. Or bottom seine on resilient mud/sand habitats. Or midwater trawl that is known to contact bottom occasionally. Or purse seine known to commonly contact the bottom.*
- *2 - Bottom dragging gears (dredge, trawl) fished on resilient mud/sand habitats. Or gillnet, trap, or bottom longline fished on sensitive boulder or coral reef habitat. Or bottom seine except on mud/sand. Or there is known trampling of coral reef habitat.*
- *1 - Hydraulic clam dredge. Or dredge or trawl gear fished on moderately sensitive habitats (e.g., cobble or boulder)*

- *0 - Dredge or trawl fished on biogenic habitat, (e.g., deep-sea corals, eelgrass and maerl) Note: When multiple habitat types are commonly encountered, and/or the habitat classification is uncertain, the score will be based on the most sensitive, plausible habitat type.*

Factor 4.2 - Modifying Factor: Mitigation of Gear Impacts

Goal: Damage to the seafloor is mitigated through protection of sensitive or vulnerable seafloor habitats, and limits on the spatial footprint of fishing on fishing effort.

- *+1 —>50% of the habitat is protected from fishing with the gear type. Or fishing intensity is very low/limited and for trawled fisheries, expansion of fishery's footprint is prohibited. Or gear is specifically modified to reduce damage to seafloor and modifications have been shown to be effective at reducing damage. Or there is an effective combination of 'moderate' mitigation measures.*
- *+0.5 —At least 20% of all representative habitats are protected from fishing with the gear type and for trawl fisheries, expansion of the fishery's footprint is prohibited. Or gear modification measures or other measures are in place to limit fishing effort, fishing intensity, and spatial footprint of damage caused from fishing that are expected to be effective.*
- *0 —No effective measures are in place to limit gear impacts on habitats or not applicable because gear used is benign and received a score of 5 in factor 4.1*

Factor 4.3 - Ecosystem-Based Fisheries Management

Goal: All stocks are maintained at levels that allow them to fulfill their ecological role and to maintain a functioning ecosystem and food web. Fishing activities should not seriously reduce ecosystem services provided by any retained species or result in harmful changes such as trophic cascades, phase shifts or reduction of genetic diversity. Even non-native species should be considered with respect to ecosystem impacts. If a fishery is managed in order to eradicate a non-native, the potential impacts of that strategy on native species in the ecosystem should be considered and rated below.

- *5 — Policies that have been shown to be effective are in place to protect species' ecological roles and ecosystem functioning (e.g. catch limits that ensure species' abundance is maintained at sufficient levels to provide food to predators) and effective spatial management is used to protect spawning and foraging areas, and prevent localized depletion. Or it has been scientifically demonstrated that fishing practices do not have negative ecological effects.*
- *4 — Policies are in place to protect species' ecological roles and ecosystem functioning but have not proven to be effective and at least some spatial management is used.*
- *3 — Policies are not in place to protect species' ecological roles and ecosystem functioning but detrimental food web impacts are not likely or policies in place may not be sufficient to protect species' ecological roles and ecosystem functioning.*
- *2 — Policies are not in place to protect species' ecological roles and ecosystem functioning and the likelihood of detrimental food impacts are likely (e.g. trophic*

cascades, alternate stable states, etc.), but conclusive scientific evidence is not available for this fishery.

- *1 — Scientifically demonstrated trophic cascades, alternate stable states or other detrimental food web impact are resulting from this fishery.*

4.1 Physical Impact of Fishing Gear on the Habitat/Substrate

Diving - GFMC

Diving - SAFMC

Score: 5

Diving is assumed to lead to no contact with the seafloor, allowing for the maximum score of 5.

Set longlines - GFMC

Set longlines - SAFMC - Golden tilefish fishery

Set longlines - SAFMC

Score: 2

The bottom longline component of the snapper-grouper/reef fish fishery in the South Atlantic and Gulf primarily operates over hard substrates such as rock, shells, and corals (Scott-Denton et al. 2011). Bottom longline is likely to have a moderate impact on these substrates (Seafood Watch 2020), allowing for a score of 2.

Vertical lines - SAFMC

Vertical lines - GFMC

Vertical lines - SAFMC - Wreckfish (target)

Vertical lines - SAFMC | GFMC - Yellowtail snapper (target)

Score: 4

The vertical line component of the snapper-grouper/reef fish fishery in the South Atlantic and Gulf primarily operates over hard substrates such as rock, shells, and corals (Scott-Denton et al. 2011). Vertical line is likely to have a minimal impact on these substrates (Seafood Watch 2020), allowing for a score of 4.

4.2 Modifying Factor: Mitigation of Gear Impacts

All fisheries

Score: 0

The score given in the preceding factor 4.1 for each fishery can be modified upward (by a maximum of 1, and to a maximum of 5) if there are measures in place to mitigate impacts

on seafloor habitats (gears scoring 5 in factor 4.1 cannot be modified). For the vertical line and longline gear types used by the snapper-grouper/reef fish fisheries, such measures can include:

- spatial closures that protect 50% of representative habitat for the gear type used by the fishery (+1 modifier) or that protect 20% of representative habitat from all bottom contact AND vulnerable habitats are strongly protected (+0.5 modifier), and
- gear modifications in the fishery that are specifically designed to minimize impacts on the seafloor have been found effective and used by the majority of vessels (+1 modifier) or gear modifications are in use in the fishery that are reasonably expected to be effective (+0.5 modifier)
- other measures that have been demonstrated to be highly effective in reducing the impacts of the fishing gear, which may include an effective combination of gear modifications and spatial closures (+1 modifier)

Although there are closed areas, and other measures are in place in both regions (see Justification), none of the conditions above is met for the assessed fisheries, so no modifiers have been awarded.

Supplementary Information

SAFMC

The original FMP prevented the use of explosives and poisons throughout the management area and established a process to designate artificial reefs and other modified habitats as SMZs (SAFMC 1983), while Regulatory Amendment 1 prohibited all gears except handheld hook-and-line and spearfishing within SMZs (SAFMC 2017g). Original documentation could not be acquired, but the SAFMC Snapper-Grouper FMP website indicates that SMZs were later designated in Florida in 1988 (Regulatory Amendment 2) and 1989 (Regulatory Amendment 3), South Carolina in 1992 (Regulatory Amendment 5) and 1998 (Regulatory Amendment 7), and Georgia in 2000 (Regulatory Amendment 8). Further, Amendment 6 created the 92 mi^2 Oculina Experimental Closed Area in 1994, which prohibits targeting or harvesting snapper-grouper using any gear within the area, and also prohibits anchoring within the closed area. These regulations not only provide a refuge free from exploitation for snapper-grouper species, but also protect critical habitat.

A number of management measures have also been implemented that, although not specific to the handline fishery, are beneficial for snapper-grouper habitat:

- The SAFMC established the 92 mi^2 Oculina Habitat Area of Particular Concern (HAPC) in 1984 through the Coral, Coral Reef and Live/Hardbottom Habitat Plan in conjunction with the GFMC {SAFMC 2005b}. The boundaries of the Oculina HAPC were later expanded to incorporate an area closed to trawling for rock shrimp, and

added two “satellite” Oculina areas {SAFMC 2005b}, bringing the total area of the HAPC to approximately 300 mi^2.

- The SAFMC then approved the Comprehensive Ecosystem-Based Amendment (SAFMC 2009d) that established Coral HAPC covering more than 23,000 mi^2 to protect what may be the largest contiguous distribution of pristine deepwater corals in the world. Regulations within all the HAPC established by the SAFMC prohibit the use of all bottom-tending gear, including bottom trawls, bottom longlines, dredges, fish pots, and fish traps, to protect the sensitive coral and other hard-bottom habitats within the HAPC.
- Amendment 4 to the Snapper-Grouper FMP (SAFMC 1991) prohibited the use of longline gear shoreward of 50 fathoms to protect live bottom areas.
- Amendment 36 (effective on 31 July 2017) designated five SMZs to protect spawning, or reproducing, fish and their habitat. The SMZs are aimed at the snapper-grouper complex and prohibit fishing for, retaining, or possessing fish of the snapper-grouper complex all year-round. Anchoring is also prohibited in most areas. SMZs have been designated throughout the Florida, North Carolina, and South Carolina areas, each ranging from about 3 to 5 mi^2 (NOAA 2017e).

Circle hooks are required to be used by all vessels in the U.S. Gulf reef fish fishery and the Southeast Atlantic snapper-grouper fishery {Sauls and Ayala 2012; GMFMC 2015b; SAFMC 2010b); circle hooks are expected to be less likely to snag the substrate {Cooke and Suski 2004}, though limited data exist to substantiate this point.

GFMC

The GFMC Reef Fish FMP and subsequent amendments have established management measures that protect coral and hard-bottom habitats for many species managed under this plan. The original FMP established a “stressed area” akin to a specialized management zone (SMZ), within which several bottom-damaging gears, including fish traps and rollerhead trawls, were prohibited (GMFMC 1981). This gear restriction is intended to prevent further damage from these gears and allow regrowth in areas previously affected. A regulatory amendment in 1999 created the Steamboat Lumps and Madison-Swanson marine reserves, which prohibited fishing with any gear within the combined 219 mi^2 reserves (GMFMC 1999b). The reserves were originally created for a limited time, but their duration was extended through Amendment 21 (GMFMC 2004c), and made permanent through Amendment 30B (GMFMC 2008a). Additional closed areas were established through Amendment 19 (GMFMC 2002a), which developed the Tortugas Ecological Reserves and prohibited all fishing activity and anchoring within the Reserves.

In addition to the habitat protection measures implemented through the Reef Fish FMP, a number of beneficial measures have been implemented through other means. In particular, the joint GFMC/SAFMC Fishery Management Plan for Coral and Coral Reefs (GMFMC 1982) established three coral habitat areas of particular concern (HAPC) within the Gulf where fishing with certain bottom-tending gear (including longlines) is

prohibited. The Coral FMP also prohibits the harvest of stony corals and most gorgonian corals. Subsequent amendments to the Plan also address harvest of live rock. The most recent amendment to the Plan (Amendment 9) established 13 new HAPC areas, in which fishing with bottom longlines (among other bottom-tending gears) is prohibited (Federal Register 2020).

Managers have closed several areas in the Gulf to all fishing (NOAA 2011). Commercial and recreational seasonal closures were implemented in 1992 and 1997, respectively, and shrimp trawling area closures were established in 1979, 1981, and 1984. MPAs and selected areas prohibit gears at certain depths in both the Gulf and the South Atlantic. Reef fishes received specific MPAs in 1994 where conflicts were arising between commercial and recreational sectors {Brandt and Jackson 2013}. Approximately 40% of the Gulf is declared an MPA, but only 0.5% of the Gulf is closed to fishing (NOAA 2011). There is a limited capacity to encourage recruitment into the fishery because of the lack of support for spawning grounds and juveniles of some snapper species (Karnauskas et al. 2013). Various area closures have been established throughout the Gulf to protect spawning aggregation sites. Nursery area maps have been created; e.g., for the Freeport Rocks (GMFMC 2010), and were used in coordination with VMS and observer coverage to facilitate area-based management.

Circle hooks are required for all vessels in the U.S. Gulf reef fish fishery and the Southeast Atlantic snapper grouper fishery {Sauls and Ayala 2012; GMFMC 2015b; SAFMC 2010b); circle hooks are expected to be less likely to snag the substrate {Cooke and Suski 2004}, though limited data exist to substantiate this point.

4.3 Ecosystem-based Fisheries Management

All fisheries

Moderate Concern

Broad policies to protect ecosystem functioning are being developed or are in place in both the U.S. South Atlantic and the Gulf, but none yet ensures catch limits that account for the role of the main catch species in the ecosystem (see Justification); therefore, a score of “moderate concern” (3) is awarded.

Supplementary Information

NOAA Fisheries has been moving toward ecosystem-based fishery management for decades. It first developed its Ecosystem-based Fisheries Management policy and roadmap in 2016 and updated that policy in 2024 (NOAA 2024c). As documented in the policy, NOAA fisheries “... strongly supports implementation of Ecosystem-Based Fisheries Management (EBFM) to engage, inform, and enable better decisions with and for our partners on the trade-offs among and between fisheries (commercial, recreational, and subsistence), aquaculture, protected species, biodiversity, habitats, and

other ecosystem components, including the human communities that depend upon them and their associated ecosystem services. In the face of accelerating climate change, recognizing the interconnectedness of these ecosystem components is essential to maintain resilient and productive ecosystems and associated human communities, activities, and well-being, even as these ecosystems and communities respond to climate, habitat, ecological, other environmental changes, and other ocean-uses" (NOAA 2024c).

To advance EBFM efforts, NOAA has developed Implementation Plans for each region that identify priority actions and milestones for the 5 years following publishing (all were published in 2019) (https://www.fisheries.noaa.gov/national/ecosystems/ecosystem-based-fishery-management-implementation-plans). All plans focus on the same six principles:

- Implement ecosystem-level planning
- Advance our understanding of ecosystem processes
- Prioritize vulnerabilities and risks of ecosystems
- Explore and address trade-offs within an ecosystem
- Incorporate ecosystem considerations into management advice
- Maintain resilient ecosystems

SAFMC

As noted in the Implementation Plan for the South Atlantic (NOAA 2019a), the SAFMC and NOAA have been proactive in moving toward EBFM, with many elements in place before the Implementation Plan was published. The SAFMC first implemented an ecosystem-based approach to fishery management for all its managed species in 2010, with the adoption of a Fishery Ecosystem Plan (FEP) (SAFMC 2009c} and the first Comprehensive Ecosystem-Based Amendment (SAFMC 2009d). The SAFMC views habitat preservation as a primary role in achieving ecosystem management, so the FEP and Comprehensive Ecosystem-Based Amendment focus heavily on protecting sensitive coral and live bottom habitats on which many of the SAFMC-managed species rely (SAFMC 2009d; SAFMC 2009c). Through several volumes, the FEP addresses ecosystem interactions (e.g., food webs), human interactions, essential fish habitat, fishing and nonfishing threats to the South Atlantic ecosystem, and research needs. Comprehensive Ecosystem-based Amendment 1 and Comprehensive Ecosystem-based Amendment 2 focus primarily on development of protection of habitat, while CE-BA 3 (under development) deals specifically with improved bycatch data collection (SAFMC 2018f).

Specific ecosystem management goals identified in the FEP include maintaining or improving: 1) ecosystem structure and function; 2) social, economic, and cultural benefits derived from the natural resources; and 3) biological, economic, and cultural diversity (SAFMC 2009c). Since this original plan, a new version has been developed, the FEP II (SAFMC 2018a) as compiled in (SAFMC 2024). Broadly, this version addresses maintaining or improving ecosystem structure and function; maintaining or improving economic, social, and cultural benefits from resources; and maintaining or improving

biological, economic, and cultural diversity for the SA region (SAFMC 2024). An Ecosystem Status Report for the U.S. South Atlantic was published in 2021 (Craig et al 2021), and ongoing research is conducted surrounding the ecosystem dedicated to food web connectivity, climate, anthropogenic use of the ocean, and so on (Craig et al 2021; SAFMC 2024).

Although management is in place to reflect ecosystem variability, stock assessments are generally not yet based on ecosystem-based models (SAFMC 2017k), and the ecological role and function of the snappers, groupers, and other reef fish are not discussed in stock assessments (example references follow) and not considered when setting catch limits policies (SAFMC 2023c). The SAFMC recognizes that there are few situations where food web properties or predator-prey interactions have been reflected in the management framework (SAFMC 2017k), which is of particular concern for species that are overfished (e.g., gag, red grouper, red snapper; see Criterion 1). That said, a number of stock assessments of snapper-grouper and related species in the South Atlantic do now review available evidence of environmental factors that may affect the stock's abundance. This is often captured in the Terms of Reference for the stock assessment, along the lines of this statement from the forthcoming SEDAR 94 for Florida hogfish: "Identify and describe ecosystem, climate, species interactions, habitat considerations, and/or episodic events that would be reasonably expected to affect population dynamics." A review of the SEDAR stock assessments for the South Atlantic from the last 5 years found such an analysis in the SA gray triggerfish (SEDAR 2024a) and SA/GoM yellowtail snapper stock assessments (SEDAR 2020f). But a lack of data has confounded efforts to include these drivers in the assessment models. For example, in the yellowtail snapper assessment, the authors reported that "No attempt was made to investigate episodic types of natural mortality (red tides, cold kills, oil spills, etc.) because there were no data on which to base such modifications to the M parameter" (SEDAR 2020f). That assessment also investigated "... estimates of natural mortality rates for different life stages of Yellowtail Snapper using ecosystem simulation models (e.g., Ecopath with Ecosim and OSMOSE)" (SEDAR 2020f). There does not seem to have been consideration of red tides or other environmental drivers in other South Atlantic stock assessments, including red snapper (SEDAR 2021) and gag grouper (SEDAR 2021f), nor in the Terms of Reference for forthcoming assessments of yellowtail snapper, or red grouper (https://sedarweb.org/sedar-assessments/).

GFMC

At the time NOAA developed EBFM implementation plans (2019), the GFMC had not developed a Fishery Ecosystem Plan (FEP) or other document that stated ecosystem goals and priorities, which made the delineation of more specific priorities a challenge (NOAA 2019). Since then, a draft FEP has been developed for the region (LGLERA 2022) and is currently being discussed and tested within the GFMC's process (primarily through the Ecosystem Technical Committee: https://gulfcouncil.org/wp-content/uploads/Q-4a-ETC_meeting_summary_Sept_2023_v2.pdf).

Like the SAFMC, the GFMC had worked on some areas of EBFM ahead of the Implementation Plan being published, often through amendments to the Reef Fish FMP. Many of these indirectly address ecosystem function. For example, a comprehensive essential fish habitat (EFH) amendment was implemented in 1998 that describes EFH for 26 representative species managed by the GFMC (GMFMC 1998). These 26 species account for approximately one-third of all species managed by the GFMC, but represent the majority of landings in the region and occur in all habitat types within the Gulf of Mexico, so additional species would not result in additional areas of EFH (GMFMC 1998). The EFH amendment defines EFH for each species or species complex, identifies threats to these habitats, describes predator-prey relationships for the included species, and provides recommendations to minimize impacts to these habitats (GMFMC 1998). The GoM has also implemented measures related to EBFM through tools such as spatial closures (e.g., marine protected areas or MPAs), bycatch reduction methods, and inclusion of ecosystem considerations into single-species stock assessments and species regulations {O'Farrell et al. 2017}. ACLs have been implemented to mitigate ecological impacts (e.g., to ensure that further pressure is not applied to gag or fisheries similar to red snapper) (GMFMC 2015e). MPAs and other protected areas offer refuge to the snapper species. Some of the efforts to include environmental or ecosystem changes in stock assessments are the inclusion of red tide mortality in some grouper species and the development of predictions of recruitment strength due to oceanographic influences for red snapper (NOAA 2019). Ecosystem status reports have also been published in 2013 and 2017 (Karnauskas et al 2017a).

Although nascent management is in place to reflect ecosystem variability, stock assessments are generally not yet based on ecosystem-based models, and the ecological role and function of the snappers, groupers, and other reef fish are not discussed in stock assessments (example references follow) and not considered when setting catch limits policies or setting thresholds for overfished/overfishing (GMFMC 2022). But a number of stock assessments of snapper-grouper and related species in the Gulf do now review available evidence of environmental factors that may affect the stock's abundance. This is often captured in the Terms of Reference for the stock assessment, along the lines of this statement from SEDAR 74 for red snapper: "Describe any known evidence regarding ecosystem, climate, species interactions (e.g., predation studies), habitat considerations, species range modifications (expansions or contractions) and/or episodic events (including red tide, upwelling events, and hypoxia) that would reasonably be expected to affect red snapper population dynamics" (SEDAR 2024). Focal drivers to date seem to have been red tide and the Deepwater Horizon oil spill. In some cases, these drivers have been integrated into the stock assessment models, such as red tide index in the red grouper assessments (SEDAR 2019). In others, a lack of data has confounded such attempts. For example, in the yellowtail snapper assessment, the authors reported that "No attempt was made to investigate episodic types of natural mortality (red tides, cold kills, oil spills, etc.) because there were no data on which to base such modifications to the M parameter. (SEDAR 2020f). That assessment also investigated "... estimates of natural

mortality rates for different life stages of yellowtail snapper using ecosystem simulation models (e.g., Ecopath with Ecosim and OSMOSE)" (SEDAR 2020f). There does not seem to have been consideration of red tides or other environmental drivers in other Gulf reef fish stock assessments, including vermilion snapper (SEDAR 2020e) and greater amberjack (SEDAR 2020g), nor in the Terms of Reference for the forthcoming assessment of yellowtail snapper (https://sedarweb.org/sedar-assessments/).

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Appendix A: Estimated Landings of Reef Fish by Region and Fishery, 2018–22 Summed

Commercial landings by gear type were obtained through a data request to ACCSP (see Tables 23 and 24 for summaries of the data received, and Appendix D for details on the request). This dataset is limited to the U.S. South Atlantic Region states, but it covers all nonconfidential Florida landings, including those assigned to the Gulf region. The data are aggregated to minimize the data loss from confidentiality rules, such that catches are summed across the years included (2018–22) and by region rather than state. The dataset does not include discards.

Table 23: Estimated landings of reef fish by gear type/fishery in the U.S. South Atlantic region (MT; average 2018–22). Landings are rounded, so 0 means landings were > 0 but < 0.5 MT. Data are nonconfidential only, so all values should be considered a minimum, and blanks do not necessarily mean zero landings. Catch accounting for ≥1% of each column is highlighted in light blue, for ≥5% in dark blue, and for ≥20% of the total catch of that species (i.e., row) recorded in this dataset in red text. Stock of Concern determinations are based on NOAA FSSI (NOAA 2025) where available, and IUCN where not (* indicates the stock is not considered a stock of concern, but more information is presented following the table). Rec./total (%) refers to the percentage of the total landings made by the recreational fleet, with yellow highlighting indicating ≥80%. Values in **bold** indicate values ≥ 20% of the total commercial catch in each row. Columns highlighted in grey are of "fisheries" not included in this Seafood Watch assessment.

Common Name	Stock of Concern?	Rec./total (%)	Vertical line	Dive	Longline	Pots and traps	All other gears
Snapper, Yellowtail	–	44	**610 (yellowtail target)**	0	0	0	48
Snapper, Vermilion	–	58	**360**	1	0	3	0
Amberjack, Greater	–	72	**213**	17	2	–	6
Bass, Black Sea	–	61	24	0	0	**48**	**91**
Grouper, Gag	Overfishing, overfished	77	**96**	22	0	0	0
Triggerfish, Gray	–	86	**84**	3	0	1	0

Grouper, Snowy	Overfishing, overfished	14	**72**	1	5		0
Jack, Almaco	–	78	**62**	3	0	0	1
Wreckfish	–	0	**64 (wreckfish target)**				–
Snapper, Red	Overfishing, overfished	67	**50**	4	0	0	3
Tilefish, Blueline	–	57	**39**	0	9	–	1
Porgy, Red	Overfished	64	**42**	0	–	0	0
Snapper, Gray	–	97	**33**	6	–	0	1
Scup	–	4	0			–	**37**
Snapper, Mutton	–	89	**28**	4	1	1	1
Scamp	–	62	**26**	5	0	0	–
Grouper, Black	–	71	11	17	0	0	0
Snapper, Silk	–	22	**16**	0	–	–	0
Grouper, Red	Overfished	48	10	3	2	0	0
Grouper, Yellowedge	*	5	**7**	0	**5**		–
Hogfish	Overfished (FL)	84	3	8		0	0
Rudderfish, Banded	–	80	7	0	–	–	0
Grunt, White	–	99	5	0	–	1	0
Porgy, Knobbed	–	74	4	0	–	0	0
Spadefish, Atlantic	–		**0**	**1**		–	**3**

Amberjack, Lesser	–	40	2	1			1
Grouper, Yellowmouth	**	0	1	**2**			
Snapper, Cubera	–	84	2	1			0
Porgy, Jolthead	–	91	1	0	0	1	0
Hind, Rock	–	71	2	0			
Jack, Bar	–	12	1	0	–	–	0
Hind, Red	–	38	1	0		0	0
Snapper, Lane	***	98	1	0	–	0	0
Snapper, Blackfin	–	0	**1**	0	–		
Triggerfish, Ocean	–	98	0	0		0	0
Tilefish, Sand	–	100	1	0		–	0
Grouper, Yellowfin	–		**0**	**0**			
Snapper, Queen	–	12	0	–	–		–
Tomtate	–		**0**	–		–	–
Graysby	–		**0**	**0**		–	0
Grouper, Misty	–	0	**0**				
Bass, Rock Sea	–		**0**	–		**0**	
Cottonwick	–			–		–	**0**
Porgy, Whitebone	–	98	0				

Bass, Bank Sea	–		**0**			–	
Margate	–		**0**	–		–	
Hind, Speckled	–	0	**0**		–		
Porgy, Saucereye	–	100	–				
Coney	–		–				
Grouper, Warsaw	–	39	–		–		
Wenchman	–		–		–		
Tilefishes	–		–		–		
Porgy, Longspine	–	100					–
Tilefish, Goldface	–					–	

* Yellowmouth grouper is considered “Vulnerable” by the IUCN, both in the Gulf {Cowan et al 2015b} and globally {Padovani—Ferreira et al 2018a}. Both ratings are based on data that are too old to use for scoring (> 10 yrs old). The Gulf of Mexico assessment finding is based on declines in Mexico and Cuba. The global assessment does include an overview from the United States, but the determination is based on declines in other parts of the species’ range, including Brazil, Trinidad and Tobago, Mexico, and Cuba {Padovani—Ferreira et al 2018a}.

** Yellowedge grouper is considered “Vulnerable” globally {Padovani—Ferreira et al 2018b}. The assessment is based on old data, and the finding is driven by declines in the U.S. Gulf of Mexico, Brazil, Venezuela. and Mexico. The U.S. Gulf stock is currently not overfished nor undergoing overfishing (NOAA 2025).

*** There is no stock assessment of lane snapper in the U.S. South Atlantic. For management purposes, the stock is grouped with cubera snapper and gray snapper in the South Atlantic Snappers Complex, with an “overfished” status of “unknown” (NOAA 2025). Two IUCN assessments are available, one with a global scope (Lindeman et al 2016d), and the other specific to the Gulf (Lindeman et al 2016e). Both considered lane snapper “Near Threatened”; however, both are based on information > 10 yrs old, so they cannot be used for scoring. The majority of fishing mortality is from the recreational fleet.

Table 24: Estimated landings of reef fish by gear type/fishery in the U.S. Gulf region (MT; average 2018–22). Landings are rounded, so 0 means landings were > 0 but < 0.5 MT. Data are nonconfidential only, so all values should be considered a minimum, and blanks do not necessarily mean zero landings. Catch accounting for ≥1% of each column is highlighted in light blue, for ≥5% in dark blue, and for ≥ 20% of the total catch of that species (i.e., row) recorded in this dataset in red text. Stock of Concern determinations are based on NOAA FSSI (NOAA 2025) where available, and IUCN where not (* indicates the stock is not considered a stock of concern, but more information is presented after the table). Rec./total (%) refers to the percentage of the total landings made by the recreational fleet, with yellow indicating ≥ 80%. Values in **bold** indicate values ≥ 20% of the total commercial catch in each row. Columns highlighted in grey are of "fisheries" not included in this Seafood Watch assessment.

Common Name	Stock of Concern?	Rec./total (%)	Vertical line	Dive	Longline	Pots and traps	All other gears
Snapper, Red	–	67	**1,076**	12	205	–	44
Grouper, Red	–	48	**385**	6	**875**	–	28
Snapper, Vermilion	–	58	**330**	1	2	–	5
Grouper, Gag	Overfished	77	**160**	20	**106**	–	6
Grouper, Yellowedge	–	5	9	–	**243**		0
Snapper, Yellowtail	–	44	**153 (yellowtail target)**	0	0		9
Amberjack, Greater	Overfished	72	**53**	29	9		2
Scamp	–	62	**26**	1	**30**		1
Porgy, Red	–	64	**51**	0	4		1
Tilefish, Blueline	–	57	3	–	**47**		0
Snapper, Gray	–	97	27	8	6	0	2
Bass, Black Sea	–	61	8	0	–	**35**	0
Grouper, Snowy	–	14	7	–	**36**		0

Snapper, Mutton	–	89	5	1	**30**	–	0
Jack, Bar	–	12	**13**	1	2		**10**
Hind, Speckled	–	0	2	0	**22**		0
Triggerfish, Gray	–	86	20	1	2	0	1
Grouper, Black	*	71	3	3	9	–	0
Snapper, Silk	–	22	**8**	0	5	–	0
Snapper, Lane	Overfishing	98	7	0	2	–	0
Jack, Almaco	–	78	5	1	3	–	0
Porgy, Jolthead	–	91	3	0	5	0	0
Snapper, Queen	–	12	1	–	**4**		0
Hogfish	–	84	0	4	–	0	0
Rudderfish, Banded	–	80	4	0	0	–	0
Bass, Rock Sea	–		0			**4**	0
Grouper, Warsaw	–	39	2	–	2		–
Snapper, Blackfin	–	0	**1**	–	**2**		0
Spadefish, Atlantic	–		**0**	**0**		**0**	**2**
Porgy, Knobbed	–	74	1	0	0	–	0
Grunt, White	–	99	0	0	–	1	0
Hind, Red	–	38	0	0	1		0

Bass, Bank Sea	–		**0**			**1**	
Amberjack, Lesser	–	40	0	0	0		0
Snapper, Cubera	–	84	0	0	0		–
Wenchman	–		**0**		0		–
Hind, Rock	–	71	0	0	0		0
Tilefish, Sand	–	100	0	–	0		0
Grouper, Yellowfin	–		0	–	**0**		
Triggerfish, Ocean	–	98	0	0	–		–
Graysby	–		**0**	0	–	–	–
Grouper, Yellowmouth	**	0	**0**	0	–		–
Grouper, Misty	–	0	**0**		–		
Porgy, Longspine	–	100	–				–
Tilefish, Goldface	–		–		–		
Tomtate	–						–
Cottonwick	–					–	–

* Black grouper is considered “not overfished” in the Gulf (NOAA 2025).

** Yellowmouth grouper is considered “Vulnerable” by the IUCN, both in the Gulf {Cowan et al 2015b} and globally {Padovani—Ferreira et al 2018a}. Both ratings are based on data that are too old to use for scoring (> 10yrs old). The Gulf assessment finding is based on declines in Mexico and Cuba. The global assessment does include an overview from the United States, but the determination is based on declines in other parts of the species’ range, including Brazil, Trinidad and Tobago, Mexico, and Cuba {Padovani—Ferreira et al 2018a}.

Appendix B: Observer Data Summary

Information on discards was obtained from observer data from the Southeast Observer Program for 2018–22 (aggregated) that were obtained by request (NMFS SEFSC Observer program, July 2023). The data received were from three separate programs. The percentage of the fisheries covered by these programs is quite low (1–2%), so these data are not used alone for characterizing the fishery. Instead, they are used to identify species that are typically discarded for consideration as main species per the conditions above. Because "target species" is identified in some of these datasets, these sets are the primary source for the conclusion that the yellowtail and wreckfish fisheries are separate fisheries.

- South Atlantic Vertical Line Observer Program, stratified by region (South Atlantic only), species, target species (as named by the captain before hauling), number of fish, average weight of fish, and disposition (kept, discarded alive, discarded dead). Sharks are not routinely weighed in these programs, and no average weight was provided in the dataset.
- Shark Bottom Longline Observer Program, stratified by region (Gulf, South Atlantic), species, target species, number of fish, average weight of fish, and disposition. This program was expanded in 2022 to include the South Atlantic Snapper Grouper Bottom Longline fishery (this fishery is not included in the present assessment because it only catches golden tilefish).
- Reef Fish Observer Program, stratified by region (Gulf only), gear (vertical longline, bottom longline), species, number of fish, average weight of fish, and disposition. Target species is not requested or provided in this program.

South Atlantic

Vertical hook and line

Table 25: Observed catch in the South Atlantic vertical line fishery (kg; 2018–22 summed). The target species reported by the program except for the "snapper, grouper, triggerfish and amberjack target," where the speci composition of the catch was similar enough to combine for the purposes of this Seafood Watch assessment. Numbers may not match stock assessments because weight has been calculated by multiplying the number of by average weights as recorded by the observer program. Sharks are not routinely weighed in these programs no average weight was provided in the dataset. Catch accounting for ≥ 5% of each column is highlighted in blu while that accounting for ≥ 20% of the total catch of that species (i.e., row) recorded in this dataset is highligl yellow. Species of Concern are highlighted in red; determinations are based on NOAA FSSI (NOAA 2025) whe available, and IUCN where not. Columns highlighted in grey are of "fisheries" not included in this Seafood Wat assessment.

Species	Stock of Concern?	Observed catch by target species/assemblage (kg)				Vertical line as % of total commercial landings	Rec. a of to landi
		Snapper grouper trigger amberjack target	Yellowtail snapper target	Wreckfish target	Other targets		
Vermilion Snapper	No	15,680			96	99	55
Yellowtail Snapper	No	183	11,719			93	96
Gray Triggerfish	No	5,797			15	95	87
Greater Amberjack	No	5,072				90	75
Gag	Ofg, ofd	4,087			29	81	59
Red Snapper	Ofg, ofd	3,889			188	87	97
Almaco Jack	LC	2,912				95	81
Snowy Grouper	Ofg, ofd	2,009			105	93	9
Red Porgy	Ofd	1,535				99	70
Black Sea Bass	No	303			996	15	52
Wreckfish	No			1,196		100	No da

Mutton Snapper	No	948	117			81	96
Gray Snapper	LC	799	177			83	99
King Mackerel	No	79			807		65
Scamp	No	775				83	34
Blue Runner	LC	19	654		3		98
Golden Tilefish	No	203			228	10 (based on observer data)	37
Blueline Tilefish	No	154			274	7	76
White Grunt	LC	295	7		122	78	100
Silk Snapper	LC	395				100	39
Little Tunny	LC	30	179		163		85
Banded Rudderfish	LC	214				97	66
Tomtate	LC	159			1	100	100
Dolphinfish	No	64			81		97
Sharksucker	Unspec.	95	45				100
Red Grouper	Ofd	131				66	90
Cobia	LC	110	20				97
Great Barracuda	LC				99		98
Knobbed Porgy	LC	94				90	63
African Pompano	LC	78					94
Spottail Pinfish	LC	74			4		98

Graysby	LC	70	2			46	100
Shortspine Dogfish	not FSSI, no IUCN			62			5
Bar Jack	LC		61			65	80
Yellowedge Grouper	VU (Global), LC (GoM)	59				59	46
Barrelfish	LC	58					0
Queen Triggerfish	NT (Global), LC (GoM)	56					100
Amberjacks	Unspec.	56					
Rainbow Runner	LC		55				100
Queen Snapper	DD (Global), LC (GoM)	55				100	no da
Squirrelfishes	Unspecified	50					
Blackfin Snapper	DD (Global), LC (GoM)	50				100	1
Yellow Jack	LC		47				98
Porgy	Unspec.	16			29		
Sand Tilefish	LC	42	2			96	100
Black Bellied Rosefish	not FSSI, no IUCN	43					97
Barracudas	Unspec.				42		
Hogfish	Ofd (FL)	31				27	74
Ocean Triggerfish	LC		29			33	100
Atlantic Bumper	LC	2			26		17
Redtail Scad	LC				27		100

Whitefin Sharksucker	DD		25				100 ("Sha sucke
Spadefish	Unspec.		22			6	98 ("Atl spade
Whitebone Porgy	LC	21				100	100
Creolefish	LC	21					100
Rock Hind	LC	19				84	100
Jack	Unspec.	16					
Cuban Dogfish	LC			15			no re (com rec)
Jolthead Porgy	LC	15				41	99
Bank Sea Bass	LC	13				100	100
Bermuda Chub	LC		11				99
Sand Perch	LC	10					97
Remora	Unspec., but all LC	10					no re (com rec)
Cero Mackerel	LC		9				99 ("Cer
Horse-Eye Jack	LC		9				43
Saucereye Porgy	LC	9					no re (com rec)
Lane Snapper	NT (Global/GoM)	9				93	100

Lesser Amberjack	LC	7				51	20
Bluefish	Ofd				6		83
Grass Porgy	LC	4					0
Littlehead Porgy	LC		4				100
Atlantic Needlefish	LC		4				98
Jacks	Unspec.		3				
Short Bigeye	LC	2					100
Scup	NT (Global)	1				0	2
Tattler	LC	1					no re
Pinfish	LC				0		97

Table 26: Observed catch in the South Atlantic vertical line fishery (2018–22, number of fish summed).

Species	Stock of Concern?	Observed catch by target species/assemblage (# fish)				Vertical line as % of total commercial landings	Rec. % of total landi
		Snapper grouper trigger amberjack target	Yellowtail snapper target	Wreckfish target	Other targets		
Atlantic Sharpnose Shark	No	95	5		18	Directed fishery using gillnet and bottom longline	29
Yellowmouth Grouper	VU	6				18	1
Ballyhoo	LC		5			no data available	100

Sharks	Unspecified	17				no data available	
Round Scad	LC		12			no data available	100
Dogfish	Unspecified			22		no data available	
Atlantic Croaker	LC				16	no data available	50
Sandbar Shark	Overfished	12				Landings are gener prohibited in feder waters; no rec fishe	
Silky Shark	VU (Global)	34				no data available	97
Dusky Shark	Overfishing, overfished	5				Landings prohibite	
Shads	Unspecified				46	no data available	0
Spinner Shark	VU (NW Atlantic subpopulation)				5	no data available	85
Nurse Shark	VU (Global)	6				no data available	100

Gulf

Vertical line and set longline fisheries

Table 27: Observed catch in the Gulf vertical line and bottom longline reef fish fisheries (kg; 2018–22 summed). The target species is not reported in this dataset. Numbers may not match stock assessments as weight has been calculated by multiplying the number of fish by average weights as recorded by the observer program. Sharks are not routinely weighed in these programs, and no average weight was provided in the dataset. Catch accounting for ≥ 5% of the observed catch is highlighted in blue. Species of Concern are highlighted in red; determinations are based on NOAA FSSI (NOAA 2025) where available, and IUCN where not. The typical disposition of the observed catch is presented in the "Typically Kept?" field. This parameter does not figure into whether or not a species is a "main species" (unless it is discarded alive and there is evidence of high post-release mortality), but it does figure in Criterion 3. Sixgill and sevengill sharks are prohibited from landing under AHMS FMP: https://www.fisheries.noaa.gov/atlantic-highly-migratory-species/atlantic-highly-migratory-shark-species.

Species	Stock of Concern?	Observed catch (kg)		Rec. as % of total landings
		Bottom Longline	Vertical Line	
Red Grouper	No	186,272	15,931	47
Red Snapper	Rebuilding	61,187	96,690	62
Yellowedge Grouper	No	44,904	193	4
Gag	Overfished	21,269	4,906	81
Tilefish	No	21,424		20
Vermilion Snapper	No	277	12,896	64
Greater Amberjack	Overfished	5,036	3,840	73
Sharks	Unspecified	7,675	1,095	unsp.
Smooth Dogfish	No	7,587		no reported landings
Snowy Grouper	No	7,030	13	20
Blueline Tilefish	No	6,775		19
Scamp	DD (Global)	4,919	1,711	69
Speckled Hind	No	3,992		0
Gray Snapper	No	1,775	1,197	96
Atlantic Sharpnose Shark	No	2,690	126	86

Gray Triggerfish	Rebuilding	685	1,731	92
Red Porgy	LC	485	1,718	67
Yellowtail Snapper	No	15	1,932	34
Tiger Shark	NT	1,759		0
Almaco Jack	LC	586	1,162	84
Warsaw Grouper	No	1,516	86	39
Blacknose Shark	No	1,504		100
Jolthead Porgy	LC	1,376	111	82
Black Grouper	VU (GoM)	1,350	73	58
Sandbar Shark	Overfished	1,290		0
Jack	Unspecified	886	90	unsp.
Mutton Snapper	No	538	284	84
Lane Snapper	Overfishing	344	359	97
Smooth Puffer	LC	637		100
Queen Snapper	DD	459	129	6
Blackfin Tuna	LC	487	65	95
Cuban Dogfish	LC	527		species not in landings data
Bonito	LC	104	398	100
Barrelfish	LC	325	125	75
Silky Shark	VU (Global)	194	239	no reported landings
Silk Snapper	LC	383	47	6
Dusky Shark	Overfishing, overfished	387	38	no reported landings
Cobia, Ling	Overfishing	221	195	96
Sharksucker	Unspecified	208	201	
Banded Rudderfish	LC	234	167	90

Shortspine Dogfish	not FSSI, no IUCN	385		no reported landings
Hake	Unspecified	383		unsp.
Great Barracuda	LC	176	148	97
Blue Runner	LC		290	94
Spinycheek Scorpionfish	LC	228		100
Bearded Brotula	LC	214		100
Blackbelly Rosefish	LC	211		80
Spinner Shark	VU (NW Atlantic subpop.)	166	43	100
Unknown	Unspecified		208	
Blacktip Shark	No	146	54	65
King Snake Eel	LC	192		species not in landings data
Dolphinfish	LC	165		98
Night Shark	EN (Global)	143		no reported landings
Red Drum	No		137	99
Common Crevalle Jack	LC		130	76
White Grunt	LC		124	100
Sevengill Shark	Unspecified	109		landings prohibited
Bigeye Sixgill Shark	NT (Global)	104		landings prohibited
Conger Eel	Unspecified, but all LC	104		0
Shortfin Mako Shark	VU (Atlantic subpop.)	73		species not in landings data
Roughskin Dogfish	VU (Global)	67		species not in landings data

King Mackerel	No		65	57
Yellowmouth Grouper	VU		64	no reported landings
Reticulate Moray	LC	50		very little for eels generally
Dogfish	Unspecified	50		unsp.
Leopard Toadfish	LC	45	4	no reported landings
Sand Tilefish	LC	37	7	100
Black Jack	LC		44	no reported landings
Gulf Hake	LC	44		no reported landings
Porgy	Unspecified	40		unsp.
Blacktail Moray	LC	38		very little for eels generally
Pale-Spotted Eel	not FSSI, no IUCN	36		very little for eels generally
Blunthead Pufferfish	not FSSI, no IUCN	36		species not in landings data
Spotted Moray	LC	35		very little for eels generally
Littlehead Porgy	LC	10	24	100
Cardinal Snapper	LC	30		?
Swordfish	No	25		27
Wenchman	LC	19	2	0
Squirrelfish	Unspecified, but all LC	10	8	100
Longspine Scorpionfish	LC	17		100
Knobbed Porgy	LC	8	6	89
Creolefish	LC		14	100

Saucereye Porgy	LC	5	9	100
Blackfin Snapper	LC		13	0
Bermuda Chub	LC		13	100
Red Lionfish	Invasive	12		100
Tomtate	LC		11	100
Short Bigeye	LC	5	6	100
Rock Hind	LC		11	100
Chain Dogfish	not FSSI, no IUCN	10		species not in landings data
Longtail Bass	LC		9	100
Sand Diver	LC	7	1	species not in landings data
Goldface Tilefish	No		7	no reported landings
Atlantic Croaker	LC		7	88
Lesser Amberjack	LC		6	67
Cobia	Overfishing	6		96
Black Seabass	No		6	76
Sand Perch	LC	5		100
Purplemouth Moray	not FSSI, no IUCN	5		very little for eels generally
Dusky Flounder	LC	3	2	no reported landings
Snakefish	LC	4		species not in landings data
Honeycomb Moray	LC	4		very little for eels generally
Spiny Dogfish	No	3		no reported landings
Lizardfish	LC	3		100 (lizardfishes generally)

White Fin Sharksucker	DD		3	no reported landings
Cubbyu Drum	not FSSI, no IUCN		3	species not in landings data
Rainbow Runner	LC		3	100
Spanish Mackerel	No		2	91
Southern Pufferfish	LC		2	100
Bigeye Scad	LC		1	0
Cardinal Soldierfish	not FSSI, no IUCN		1	species not in landings data
Pinfish	LC		1	96
Tattler	LC		0	species not in landings data

Table 28: Observed catch in the Gulf vertical line and bottom longline reef fish fisheries, (2018–22, number of fish summed.

Species	Stock of Concern?	Observed catch (# fish)		Rec. as % of total landings
		Bottom Longline	Vertical Line	
Puffers	Unspecified	20		unsp.
Inshore Lizardfish	LC	14		100 (lizardfishes generally)
Caribbean Reef Shark	EN (Global)	52		landings prohibited
Requiem Shark	Unspecified	94		unsp.
Nurse Shark	VU (Global)	760	9	0
Lemon Shark	VU (Global)	302		1
Southern Hake	Species not identified	9		100

Grouper	Unspecified	5		unsp.
Great Hammerhead Shark	CR (Global)	232		0
Goliath Grouper	EN	12	7	landings prohibited in the SA, GoM, and US Caribbean
San Blas Skate	LC	7		species not in landings data
Golden Tilefish	No	36		20
Green Moray	LC	6		very little for eels generally
Hammerhead Scalloped Shark	CR (Global)	47		0
Finetooth Shark	No	10		17 (caught on longline but also targeted by gillnetters)
Ocellated Moray	LC	5		very little for eels generally
Scalloped Hammerhead Shark	CR (Global)	63		0
Bull Shark	VU (Global)	656		26
Hammerhead Shark	Unspecified	32		unsp.
Wahoo	LC	5		93
Spider Crabs	Unspecified	13		0 (assumed)

Appendix C: Observer Data with Disposition

See Appendix B, Observer Program Summary, for details on the observer data request. Catch is summed 2018–22 in kg, for species where weight was given, and left blank where only the number of fish was provided. The field "Discards/retained (%)" is calculated as (discarded dead) + (discarded alive) + (unknown) ÷ (retained).

Table 29: Gulf bottom longline observed catch from the Reef Fish Observer Program

Species	Retained	Discarded Dead	Discarded Alive	Unknown	Discards/Retained (%)
Red Grouper	115,190	24,930	9,366	595	30.3
Red Snapper	48,034	5,482	2,054	97	15.9
Yellowedge Grouper	41,450	8	135		0.3
Tilefish	21,038	27	359		1.8
Gag	19,576	346	72		2.1
Sharks		7,214	461		100.0
Smooth Dogfish		6,741	814	32	100.0
Snowy Grouper	7,028	2			0.0
Blueline Tilefish	4,963	715	977	9	34.3
Greater Amberjack	2,149	1,922	903	61	134.3
Scamp	4,099	34	26		1.5
Speckled Hind	3,992	0			0.0
Atlantic Sharpnose Shark		1,958	732		100.0
Tiger Shark		1,759			100.0
Gray Snapper	1,538	5			0.3
Warsaw Grouper	1,489	27			1.8
Blacknose Shark		1,419	84		100.0

Jolthead Porgy	1,376				0.0
Black Grouper	1,279	71			5.5
Sandbar Shark		1,290			100.0
Jack	166	662	58		432.8
Gray Triggerfish	429	219	12		54.0
Smooth Puffer		596	41		100.0
Almaco Jack	550	25	11		6.6
Mutton Snapper	538				0.0
Cuban Dogfish		395	117	15	100.0
Blackfin Tuna	149	25	313		227.3
Red Porgy	394	46	28	1	19.2
Queen Snapper	459				0.0
Dusky Shark		280	107		100.0
Shortspine Dogfish		272	93	20	100.0
Hake	76	9	296	2	402.5
Silk Snapper	381	2			0.6
Barrelfish	325				0.0
Lane Snapper	228	43	22	2	29.3
Vermilion Snapper	241	13	5		7.7
Banded Rudderfish		229	4		100.0
Spinycheek Scorpionfish	228				0.0
Cobia, Ling	183	39			21.2
Bearded Brotula	184	14	5	10	16.1

Blackbelly Rosefish	192	1	19		10.2
Sharksucker		193	15		100.0
Silky Shark		122	72		100.0
King Snake Eel	15	118	60		1,218.9
Great Barracuda		108	68		100.0
Spinner Shark		96	70		100.0
Dolphinfish	165				0.0
Blacktip Shark		38	107		100.0
Night Shark		88	55		100.0
Sevengill Shark		55	53		100.0
Bonito	6		99		1,699.8
Bigeye Sixgill Shark	3	75	18	9	4,046.0
Conger Eel	104				0.0
Shortfin Mako Shark	17		55		318.4
Roughskin Dogfish		62		5	100.0
Reticulate Moray			50		100.0
Dogfish		48	2		100.0
Leopard Toadfish		33	12		100.0
Gulf Hake			44		100.0
Blacktail Moray		21	17		100.0
Sand Tilefish	13	18	6		180.8
Pale-Spotted Eel		36			100.0

Blunthead Pufferfish		11	8	17	100.0
Spotted Moray		20	15		100.0
Cardinal Snapper	30				0.0
Swordfish	25				0.0
Wenchman	1	0	18		1,522.6
Longspine Scorpionfish	15		2	0	13.3
Yellowtail Snapper	12	2			19.4
Red Lionfish		2	10		100.0
Chain Dogfish	1	4	5	1	1,645.8
Squirrelfish		10			100.0
Littlehead Porgy	9	1			9.1
Knobbed Porgy	7		1		13.9
Sand Diver		3	5		100.0
Saucereye Porgy	5				0.0
Sand Perch		5	1		100.0
Short Bigeye	1	4			316.7
Purplemouth Moray			5		100.0
Snakefish		4	1		100.0
Honeycomb Moray		2	1		100.0
Spiny Dogfish		1	3		100.0
Dusky Flounder		3			100.0
Bull Shark					100.0

Longtail Bass					100.0
San Blas Skate					100.0
Porgy					100.0
Hammerhead Scalloped Shark					100.0
Hammerhead Shark					100.0
Inshore Lizardfish					100.0
Green Moray					100.0
Nurse Shark					100.0
Grouper					100.0
Southern Hake					100.0
Wahoo					100.0
Goliath Grouper					100.0
Grand Total	**278,350**	**58,004**	**17,991**	**876**	**27.6**

Table 30: Gulf vertical line observed catch from the Reef Fish Observer Program

Species	Retained	Discarded Dead	Discarded Alive	Unknown	Discards/Retained (%)
Red Snapper	89,516	5,162	1,473	540	8.0
Red Grouper	13,266	2,236	404	24	20.1
Vermilion Snapper	12,566	173	146	11	2.6
Gag	4,509	371	26		8.8
Greater Amberjack	2,421	1,342	77		58.6
Yellowtail Snapper	1,870	53	9		3.3

Gray Triggerfish	896	703	132		93.1
Red Porgy	1,706	7	5		0.8
Scamp	1,683	24	3		1.6
Gray Snapper	1,138	60			5.2
Almaco Jack	1,072	86	5		8.5
Sharks		1,095			100.0
Bonito	330	52	16		20.6
Lane Snapper	334	22	2		7.4
Blue Runner	157	125	8		84.6
Mutton Snapper	283	1			0.4
Silky Shark		239			100.0
Unknown	188	18	2		10.6
Sharksucker	4	182	16		5,491.1
Cobia, Ling	181	14			7.7
Yellowedge Grouper	193				0.0
Banded Rudderfish	100	66	2		68.0
Great Barracuda	148				0.0
Red Drum		137			100.0
Common Crevalle Jack	10	120			1,250.7
Queen Snapper	129				0.0
Atlantic Sharpnose Shark		125	2		100.0

Barrelfish	125				0.0
White Grunt	118	5	1		4.7
Jolthead Porgy	111				0.0
Jack	35	54	1		159.7
Warsaw Grouper	86				0.0
Black Grouper	70	2			3.1
Blackfin Tuna	57		8		13.4
King Mackerel	62	3			4.0
Yellowmouth Grouper	61	1	2		5.7
Blacktip Shark		54			100.0
Silk Snapper	44	2	1		8.0
Black Jack		44			100.0
Spinner Shark		43			100.0
Dusky Shark		38			100.0
Littlehead Porgy	21	3			14.5
Creolefish	8		6		79.5
Blackfin Snapper	13				0.0
Bermuda Chub	2	8	4		748.4
Snowy Grouper	13				0.0
Tomtate	2	8	2		662.0
Rock Hind	7	3	0		55.4
Saucereye Porgy	6	3			44.9
Longtail Bass	9				0.0

Squirrelfish	5	1	2		60.8
Sand Tilefish	3	1	3		116.9
Goldface Tilefish	7	1			7.6
Atlantic Croaker	7				0.0
Knobbed Porgy	6				0.0
Short Bigeye	4	2	1		58.8
Lesser Amberjack	2	4			178.6
Black Seabass	3	2	1		78.0
Leopard Toadfish		2	3		100.0
White Fin Sharksucker		3			100.0
Cubbyu Drum			3		100.0
Rainbow Runner		3			100.0
Spanish Mackerel		2			100.0
Wenchman	1		1		218.2
Southern Pufferfish		2			100.0
Dusky Flounder		2			100.0
Bigeye Scad		1	0		100.0
Cardinal Soldierfish	0	0			300.0
Pinfish		1			100.0
Sand Diver		1			100.0

Tattler		0	0		100.0
Reticulate Moray					100.0
Sandbar Shark					100.0
Spotted Moray					100.0
Tiger Shark					100.0
Goliath Grouper					100.0
Nurse Shark					100.0
Grand Total	**133,587**	**12,709**	**2,366**	**575**	**11.7**

Table 31: South Atlantic vertical line observed catch from the Vertical Line Observer Program

Species	Retained	Discarded Dead	Discarded Alive	Discards/Retained (%)
Vermilion Snapper	15,355	384	37	2.7
Yellowtail Snapper	11,528	363	11	3.2
Gray Triggerfish	5,654	150	7	2.8
Greater Amberjack	4,259	803		18.8
Gag	3,640	476		13.1
Red Snapper	2,814	1,141	124	44.9
Almaco Jack	2,654	255	2	9.7
Snowy Grouper	2,112	2		0.1
Red Porgy	1,249	273	12	22.8
Black Sea Bass	1,084	202	12	19.8

Wreckfish	1,196			0.0
Mutton Snapper	975	88	3	9.3
Gray Snapper	903	71	2	8.0
King Mackerel	879	6		0.7
Scamp	770	5		0.7
Blue Runner	536	136	5	26.2
Golden Tilefish	431			0.0
Blueline Tilefish	427			0.0
White Grunt	416	8	0	1.9
Silk Snapper	392	3		0.8
Little Tunny	340	32		9.5
Banded Rudderfish	198	16		8.0
Tomtate	28	118	14	469.0
Dolphinfish	143	3		2.0
Sharksucker	14	120	5	896.6
Red Grouper	125	7		5.3
Cobia	103	28		27.0
Great Barracuda	99			0.0
Knobbed Porgy	94			0.0
African Pompano	78			0.0
Spottail Pinfish	47	25	5	64.5

Graysby	70	2		2.7
Shortspine Dogfish		62		100.0
Bar Jack	53	8	0	15.2
Yellowedge Grouper	59			0.0
Barrelfish	58			0.0
Queen Triggerfish	47	9		19.2
Amberjacks	56			0.0
Rainbow Runner	34	19	2	59.7
Queen Snapper	55			0.0
Squirrelfishes	43	7		15.5
Blackfin Snapper	49	1		1.6
Yellow Jack	47			0.0
Porgy	39	6		15.3
Sand Tilefish	38	3	2	14.3
Black Bellied Rosefish	43	0		0.2
Barracudas	38	4		9.4
Hogfish	31			0.0
Ocean Triggerfish	29			0.0
Atlantic Bumper		27		100.0
Redtail Scad	26		1	1.9

Whitefin Sharksucker		25		100.0
Spadefish		22		100.0
Whitebone Porgy	20	1		3.9
Creolefish	21			0.0
Rock Hind	19			0.0
Jack	16			0.0
Cuban Dogfish		15		100.0
Jolthead Porgy	14	1		5.7
Bank Sea Bass	4	8	1	222.0
Bermuda Chub	5	5	1	114.4
Sand Perch	5	5		115.3
Remora		10		100.0
Cero Mackerel	9			0.0
Horse-Eye Jack		7	1	100.0
Saucereye Porgy	8	1		10.3
Lane Snapper	5	4		88.7
Lesser Amberjack	7			0.0
Bluefish	6			0.0
Grass Porgy	3	0		9.0
Littlehead Porgy		4		100.0
Atlantic Needlefish		3	0	100.0

Jacks	3			0.0
Short Bigeye	2			0.0
Scup	1			0.0
Tattler	0	0		150.0
Pinfish		0		100.0
Atlantic Sharpnose Shark				100.0
Yellowmouth Grouper				100.0
Ballyhoo				100.0
Sharks				100.0
Round Scad				100.0
Dogfish				100.0
Atlantic Croaker				100.0
Sandbar Shark				100.0
Silky Shark				100.0
Dusky Shark				100.0
Shads				100.0
Spinner Shark				100.0
Nurse Shark				100.0
Grand Total	**59,509**	**4,976**	**246**	**8.8**

Table 32: Observed catch from the South Atlantic Shark Bottom Longline Observer Program (kg). Only includes rows for which weight was provided (see the following Table 33 for full dataset in terms of number of fish).

	Golden Tilefish Target	Grouper Target

Species	Retained	Discarded	Retained	Discarded
Red Grouper			22,710	13,481
Red Snapper			4,053	1,373
Golden Tilefish	4,633	11		
Yellowedge Grouper			3,311	
Gag			1,275	
Scamp			747	13
Gray Snapper			232	
Blueline Tilefish			140	
Snowy Grouper	20		32	
Lane Snapper			42	7
Porgy			36	4
Gray Triggerfish			26	
Vermilion Snapper			17	
Red Porgy			16	
Cobia				6
Blacktail Moray	1	3		
Lizardfish				3

Table 33: Observed catch from the South Atlantic Shark Bottom Longline Observer Program (number of fish).

	Grouper Target		Golden Tilefish Target		Sharks Target	
Target/Species	**Retained**	**Discarded**	**Retained**	**Discarded**	**Retained**	**Discarded**
Blue/golden tilefish			**1,271**	**35**		
Golden Tilefish			1,265	3		
Blacktail Moray			1	16		

Sharks				11		
Snowy Grouper			5			
Night Shark				5		
Grouper	**11,301**	**12,440**				
Red Grouper	7,552	11,032				
Red Snapper	1,596	572				
Yellowedge Grouper	1,030	4				
Scamp	408	14				
Smooth Dogfish		276				
Gag	184	2				
Gray Snapper	140					
Cuban Dogfish		88				
Atlantic Sharpnose Shark		88				
Bearded Brotula	70	2				
Blueline Tilefish	72					
Spinycheek Scorpionfish	60					
Lane Snapper	48	12				
Tiger Shark	2	52				
Gulf Hake		54				
Sandbar Shark		46				
Golden Tilefish	29	7				
Sharks		32				
Porgy	28	4				
Red Porgy	20	10				
Pale-Spotted Eel		30				

Gray Triggerfish	12	16				
Snowy Grouper	26					
Lizardfish		24				
Vermilion Snapper	20	2				
Puffers		20				
Greater Amberjack		20				
Blacknose Shark		14				
Spider Crabs		13				
Cobia	4	1				
Ocellated Moray		5				
Shark					**5,185**	**2,259**
Blacktip Shark					2,241	256
Atlantic Sharpnose Shark					1,251	85
Bull Shark					578	36
Nurse Shark					52	528
Sandbar Shark						472
Blacknose Shark					42	367
Tiger Shark					138	208
Lemon Shark					292	10
Spinner Shark					256	34
Great Hammerhead Shark					180	52
Requiem Shark					84	10
Scalloped Hammerhead Shark					25	49
Sharks						58

Caribbean Reef Shark						52
Red Snapper						40
Smooth Dogfish					36	2
Finetooth Shark					10	

Appendix D: ACCSP Data Request Details

Table 34: South Atlantic Landings vs. Gulf (Florida) Landings by Requested Species and Gear Group, 2018–22

* Data are nonconfidential	
Database	MV_LANDINGS
Run Date	Monday, September 18, 2023
Data Fields Pulled	Region, Species_ITIS, Common name, Gear group, Count of dealers, Count of fishermen, Count of vessels, Total live pounds, Total dollars, Trip count
Time Summary	5-year grouping
Year(s)	2018–2022
State Postal	North Carolina, South Carolina, Georgia, Florida (Atlantic and Gulf)
Area Fished	All
Sub-Area Fished	All
Species	Almaco Jack, Atlantic Spadefish, Banded Rudderfish, Bank Sea Bass, Bar Jack, Black Grouper, Black Sea Bass, Blackfin Snapper, Blueline Tilefish, Coney, Cottonwick, Cubera Snapper, Gag, Goldface Tilefish, Goliath Grouper, Gray Snapper, Gray Triggerfish, Graysby, Greater Amberjack, Hogfish, Jolthead Porgy, Knobbed Porgy, Lane Snapper, Lesser Amberjack, Longspine Porgy, Margate, Misty Grouper, Mutton Snapper, Nassau Grouper, Ocean Triggerfish, Queen Snapper, Red Grouper, Red Hind, Red Porgy, Red Snapper, Rock Hind, Rock Sea Bass, Sailor's Choice, Sand Tilefish, Saucereye Porgy, Scamp, Scup, Silk Snapper, Snowy Grouper, Speckled Hind, Tilefish, Tomtate, Vermilion Snapper, Warsaw Grouper, Wenchman, White Grunt, Whitebone Porgy, Wreckfish, Yellowedge Grouper, Yellowfin Grouper, Yellowmouth Grouper, Yellowtail Snapper

Gears	Handline (330, 331, 340), Hook and Line (300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310), Longline (400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411), Pots and Traps (130, 131, 132, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 160, 161, 162, 163, 164, 180, 181, 182, 183, 184), By Hand (660, 661, 662, 663, 670, 671, 750, 760, 761, 762), All Other Gears (000, 010, 020, 021, 022, 023, 030, 031, 040, 050, 060, 070, 071, 072, 073, 074, 075, 076, 077, 078, 080, 081, 082, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 320, 321, 322, 323, 324, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 511, 512, 513, 550, 551, 552, 553, 600, 601, 602, 620, 621, 622, 623, 630, 631, 632, 633, 650, 700, 701, 702, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811)
Description of Request	Years grouped 2018 to 2022 of South Atlantic Landings (North Carolina, South Carolina, Georgia, Florida) vs. Gulf Landings (Florida) by requested Species and Gear Group (Handline, Hook and line, Longline, Pots and traps, By hand, and All other gears)

Appendix E: Sea Turtle and other ESA-Listed Species Bycatch

Table 35: Anticipated incidental takes of sea turtles in federal fisheries (Greater Atlantic Region). Batched consultation includes the Northeast Multispecies, Monkfish, Spiny Dogfish, Atlantic Bluefish, Northeast Skate Complex, Mackerel/Squid/Butterfish, and Summer Flounder/Scup/Black Sea Bass Fisheries (NOAA 2021t).

Fishery	ITS Period	Loggerhead	Leatherback	Kemp's ridley	Green	Hawksbill
American Lobster (July 31, 2014)	1 year	1 (lethal or nonlethal)	7 (lethal or nonlethal)	—	—	—
Batched Consultation 1 (gillnet; March 10, 2016)	5 years	1,345: no more than 835 lethal	4: no more than 3 lethal	4: no more than 3 lethal	4: no more than 3 lethal	—
Batched Consultation (bottom trawl; March 10, 2016)	4 years	852: no more than 284 lethal	4: no more than 2 lethal	3: no more than 2 lethal	3: no more than 2 lethal	—
Batched Consultation (trap/pot; March 10, 2016)	1 year	1 (lethal or nonlethal)	4 (lethal or nonlethal)	—	—	—
Atlantic Sea Scallop (dredge; November 27, 2018)	2 years	322: no more than 92 lethal	2 lethal (gears combined)	3: no more than 2 lethal (gears combined)	2 lethal (gears combined)	—
Atlantic Sea Scallop (trawl; November 27, 2018)	5 years	700; no more than 330 lethal				

Red Crab (February 6, 2002)	1 year	1 (lethal or nonlethal)	1 (lethal or nonlethal)	—	—	—

Table 36: Anticipated incidental takes of sea turtles in federal fisheries (HMS) (NOAA 2021t).

Fishery	ITS Period	Loggerhead	Leatherback	Kemp's ridley	Green	Hawksbill
HMS, Excluding Pelagic Longline (January 10, 2020)	3 years	91: no more than 51 lethal	7: no more than 4 lethal	22: no more than 11 lethal	NA DPS, 46: no more than 25 lethal; SA DPS, 3: no more than 2 lethal	2: no more than 1 lethal
HMS Pelagic Longline (May 15, 2020)	3 years	1,080: no more than 280 lethal	996: no more than 275 lethal	21: no more than 8 lethal in any combination		

Table 37: Anticipated incidental takes of sea turtles in federal fisheries (Southeast Region) (NOAA 2021t).

Fishery	ITS Period	Loggerhead	Leatherback	Kemp's ridley	Green	Hawksbill
Caribbean Reef Fish (October 4, 2011)	3 years	None	18 (all lethal)	—	75 (all lethal)	51: no more than 3 lethal
Coastal Migratory Pelagics (November 18, 2017)	3 years	27 (7 lethal)	1 lethal	8 (2 lethal)	31 (9 lethal)	1 lethal

Dolphin-Wahoo (August 27, 2003)	1 year	12: no more than 2 lethal	12: no more than 1 lethal	3 for all species in combination: no more than 1 lethal		
Gulf of Mexico Reef Fish (September 30, 2011)	3 years	1,044: no more than 572 lethal	11 lethal	108: no more than 41 lethal	116: no more than 75 lethal	9: no more than 8 lethal
Caribbean Spiny Lobster (December 12, 2011)	3 years	—	9 (lethal or nonlethal)	—	12 (lethal or nonlethal)	12 (lethal or nonlethal)
Gulf of Mexico/South Atlantic Spiny Lobster (August 27, 2009)	3 years	3 (lethal or nonlethal)	1 (lethal or nonlethal)	3 (lethal or nonlethal)	1 (lethal or nonlethal)	
South Atlantic Snapper-Grouper (December 1, 2016)	3 years	629: no more than 208 lethal	6: no more than 5 lethal	180: no more than 59 lethal	NA DPS, 111: no more than 42 lethal; SA DPS, 6: no more than 3 lethal	6: no more than 4 lethal

Table 38: Anticipated incidental take of smalltooth sawfish and giant manta ray in federal fisheries (NOAA 2021t).

Fishery	ITS Period	Smalltooth Sawfish	Giant Manta Ray
HMS, Excluding Pelagic Longline (January 10, 2020)	3 years	23: no more than 1 lethal	9 nonlethal
Coastal Migratory Pelagics (November 18, 2017)	3 years	1 nonlethal	—

Gulf of Mexico/South Atlantic Spiny Lobster (August 27, 2009)	3 years	2 nonlethal	—
Gulf of Mexico Reef Fish (September 30, 2011)	3 years	8 nonlethal	—
South Atlantic Snapper-Grouper (December 1, 2016)	3 years	8 nonlethal	—

Table 39: Anticipated incidental take of Atlantic sturgeon by DPS in federal fisheries. Notes: 1) Batched consultation includes the Northeast Multispecies, Monkfish, Spiny Dogfish, Atlantic Bluefish, Northeast Skate Complex, Mackerel/Squid/Butterfish, and Summer Flounder/Scup/Black Sea Bass Fisheries. 2) A.E.: adult equivalents (NOAA 2021t).

Fishery	ITS Period	Gulf of Maine	New York Bight	Chesapeake Bay	Carolina	South Atlantic
HMS, Excluding Pelagic Longline (January 10, 2020)	3 years	34: no more than 8 lethal	170: no more than 36 lethal	40: no more than 9 lethal	10: no more than 5 lethal	75: no more than 19 lethal
Coastal Migratory Pelagics (November 18, 2017)	3 years	2 nonlethal	4 nonlethal	3 nonlethal	4 nonlethal	10 nonlethal
Batched Consultation 1 (gillnet; March 10, 2016)	1 year (takes based on a 5-yr average)	137: no more than 17 lethal A.E.	632: no more than 79 lethal A.E.	162: no more than 21 lethal A.E.	25: no more than 4 lethal A.E.	273: no more than 34 lethal A.E.
Batched Consultation 1 (bottom trawl; March 10, 2016)	1 year (takes based on a 5-yr average)	148: no more than 5 lethal A.E.	685: no more than 21 lethal A.E.	175: no more than 6 lethal A.E.	27: no more than 1 lethal A.E.	296: no more than 6 lethal A.E.

Atlantic Sea Scallop (dredge; November 27, 2018)	20 years	1 lethal (any DPS)				

Table 40: Summary of anticipated 3-year take and mortality estimates in the Gulf reef fish fishery (NOAA 2011b).

Species	**Bottom Longline**	**Commercial Vertical Line**	**Recreational Vertical Line**	**Total**
Green—Total Take	26	9	16	51
Green—Lethal Take	13	3	5	21
Hawksbill—Total Take	0	13	31	44
Hawksbill—Lethal Take	0	4	9	13
Kemp's ridley—Total Take	2	0	1	3
Kemp's ridley—Lethal Take	1	0	0	1
Leatherback—Total Take	1	9	10	20
Leatherback—Lethal Take	1	4	4	9
Loggerhead—Total Take	85	—	118	203
Loggerhead—Lethal Take	42	20	16	78
Smalltooth sawfish—Total Take	2	2	4	8
Smalltooth sawfish—Lethal Take	0	0	0	0

Table 41: Estimated 3-year sea turtle total (T) and mortalities (M) in South Atlantic Snapper-Grouper Fishery (NOAA 2016b).

Species	Bottom Longline	Commercial Vertical Line	Recreational Vertical Line	All Components Combined
Loggerhead—Total	9	62	546	617
Loggerhead—Mortality	5	26	165	196
Kemp's ridley—Total	1	18	159	178
Kemp's ridley—Mortality	1	8	48	57
Green—Total	1	11	96	108
Green—Mortality	1	5	30	36
Hawksbill—Total	1	1	2	5
Hawksbill—Mortality	1	1	1	3
Leatherback—Total	3	1	1	5
Leatherback—Mortality	2	1	1	4

Appendix F: Trip Interview Program Data

Data from NOAA's Trip Interview Program (TIP) Catch Composition Data 2022 were obtained by request (NMFS SEFSC, July 2023). TIP data are generally representative, but are not a canvas in terms of number of trips interviewed (the trips intercepted and sampled are probably around 5–15% of the fleet effort), and within a trip the number of fish measured out of the whole is probably between 2% and 10% (Larry Beerkircher July 2023 pers comm). The data were stratified by trip ID, species, quantity (number of fish), length of fish, region (Gulf of Mexico vs. South Atlantic) and year (2022 only). Weight was later calculated using length-to-weight conversion formulae from NOAA (formulae were not available for all species).

Weight of fish (kg)	Rated Species																				
Associated species		Amberjack, Greater	Grouper, Black	Grouper, Gag	Grouper, Red	Grouper, Snowy	Grouper, Yellowedge	Grouper, Yellowfin	Grouper, Yellowmouth	Hogfish	Porgy, Red	Scamp	Snapper, Blackfin	Snapper, Cubera	Snapper, Gray	Snapper, Mutton	Snapper, Red	Snapper, Silk	Snapper, Vermilion	Snapper, Yellowtail	Triggerfish, Gray
Grouper, Gag		2786	279	6568	438	1580	274	137	180	430	3124	3877	1500	151	1391	1979	496	1814	4614		3077
Amberjack, Greater		5858	11	2700	62	1523	217	9	54	148	2294	1919	1063	68	157	560	478	1119	3768		2233
Grouper, Snowy		1052	39	1473	104	4779	327	11	62	103	1532	1330	917	12	77	476	291	892	2011		1042
Snapper, Vermilion		911	39	1312	159	580	75	28	66	109	2159	1005	512	43	658	932	338	502	3746		2075
Triggerfish, Gray		562	30	768	144	272	22	11	18	71	1367	492	341	47	597	804	117	317	2015		2316
Snapper, Mutton		173	69	851	263	142	9		8	51	1282	756	239	9	994	1986	65	257	1547		1172
Scamp		613	40	1231	186	403	76	80	62	191	956	1648	514	3	309	581	236	482	1058		653
Snapper, Red		293		358	52	237	84	6	63	65	604	499	97		77	119	2767	152	708		361
Snapper, Yellowtail		18		45	17	18					59	33	9		27	40		15	79	2299	45
Snapper, Gray		16	21	179	72	14	8	6		7	356	120	33		474	345	8	39	429		332
Porgy, Red		98	10	154	36	79	10	4	12	7	484	136	103	9	123	163	44	56	423		282
Grouper, Black			386	242	94	101	101			101	148	172	101		48	134		147	117		203
Snapper, Silk		72	11	123	6	101	9		45	18	118	108	97	2	15	49	25	222	121		110
Grouper, Red		14	13	97	144	8	6	18	3	30	103	102	47	3	46	65	9	10	82		77
Grouper, Yellowedge		48	10	26	19	79	131	1	15	10	34	42	25		5	2	11	29	54		30
Hogfish		29	4	78	12	24	4	8	3	96	22	65	35		8	20	9	42	48		49
Snapper, Cubera		21		67					17		67	15	37	67	15	45		30	52		67
Snapper, Blackfin		19	2	31	4	24	4	3	9	4	43	32	63	2	3	11	2	22	41		27
Grouper, Yellowmouth		8		19	4	13	9		44	6	16	27	36	4		4	15	33	21		11
Grouper, Yellowfin				30	10			38		10	26	26	30		10	4			12		10
Snapper, Queen											5	5							5		
Hind, Speckled																		6	6		
Snapper, Lane											2		2		2						2
Hogfish, Red																					
Graysby																					
Porgy, Littlehead																					
Porgy, Whitebone																					
Porgy, Jolthead																					
Hogfish, Spotfin																					
Triggerfish, Queen																					
Snapper, Caribbean Red																					
Porgy, Knobbed																					

Figure 14: NMFS Trip Interview Program (TIP) survey data 2022 for the South Atlantic vertical line fishery (NMFS SEFSC July 2023). The table presents the weight of all species recorded in those trips that accounted for the top 90% of each rated species (to reduce the influence of trips that landed a minor percentage of the species being rated). Fish are measured by length in the TIP program. These lengths were then converted to weight where conversion formulae were available. Where formulae were not available, the species is left blank.

Weight of fish (kg)	Rated Species														
Associated species	Amberjack, Greater	Grouper, Black	Grouper, Gag	Grouper, Red	Grouper, Yellowedge	Grouper, Yellowmouth	Porgy, Red	Snapper, Gray	Snapper, Lane	Snapper, Mutton	Snapper, Red	Snapper, Silk	Snapper, Vermilion	Snapper, Yellowtail	Triggerfish, Gray
Snapper, Red	5733	755	5099	6030	5617	61	2554	3541	1253	1780	12598	928	2375	706	1193
Grouper, Red	484	1326	7036	10291	265		2473	6266	2720	3043	7196	1144	2555	1592	1817
Grouper, Gag	523	462	5976	5609	353		2368	4412	919	1518	4825	590	1787	407	1778
Grouper, Yellowedge	3688	218	1412	354	9287	128	1127	518	572	562	4621	364	912	225	456
Grouper, Black	106	1630	996	1324	95		378	574	466	1246	1127	632	862	568	116
Scamp	184	268	910	905	294	36	439	703	280	530	902	297	500	226	245
Snapper, Mutton	52	487	481	764	78		190	433	351	1006	559	320	348	472	84
Grouper, Snowy	425	237	271	187	1275		246	147	95	326	619	230	346	181	36
Amberjack, Greater	892	42	171	155	784	57	271	116	150	34	662	24	194	97	219
Grouper, Warsaw	630	8	8	8	902		487	2		10	632	2	523		
Snapper, Gray	23	35	405	441	34		198	506	150	179	362	41	179	63	84
Hind, Speckled	32	78	91	123	343		26	76	93	156	85	154	81	38	45
Snapper, Queen	94	63		24	483		32	20	35	94	71	66	79	29	
Triggerfish, Gray	27	19	118	120	25		70	96	44	33	97	14	45	32	131
Snapper, Vermilion	25	35	85	88	15	1	54	67	30	42	90	48	121	15	31
Snapper, Yellowtail	9	59	54	100	10	6	20	64	54	96	57	24	23	123	18
Snapper, Lane	17	32	62	93	11		27	90	107	52	64	29	41	29	18
Snapper, Silk	5	35	61	81	27		27	32	44	72	73	128	60	20	4
Porgy, Red	10	13	41	42	12	4	52	37	11	15	46	17	25	11	13
Snapper, Cubera		12	39	39			27			39	39	27	39	27	
Grouper, Yellowmouth	17		2		17	17	17				19			17	
Snapper, Blackfin	3	10	0	7	3	2	2	0	5	7	5	7	2	8	0
Graysby															
Triggerfish, Queen															
Porgy, Jolthead															
Snapper, Cardinal															
Snapper, Dog															
Porgy, Littlehead															
Porgy, Knobbed															

Figure 15: NMFS Trip Interview Program (TIP) survey data 2022 for the Gulf bottom longline fishery (NMFS SEFSC July 2023). The table presents the weight of all species recorded retained in those trips that accounted for the top 90% of each rated species (to reduce the influence of trips that landed a minor percentage of the species being rated). Fish are measured by length in the TIP program. These lengths were then converted to weight where conversion formulae were available. Where formulae were not available, the species is left blank.