



Status of Stocks 2021

Annual Report to Congress on the Status of U.S. Fisheries

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NOAA
FISHERIES

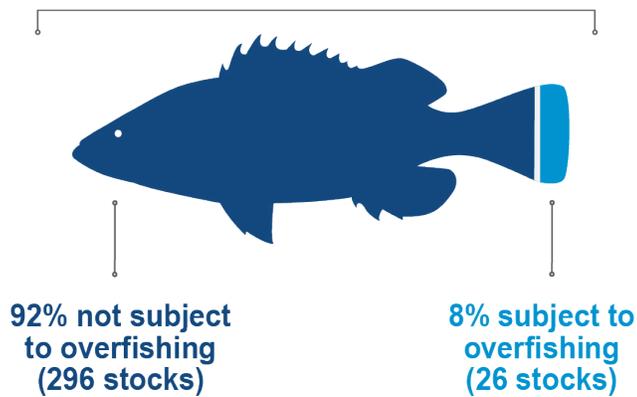
Status of Stocks 2021

NOAA Fisheries is pleased to present the *2021 Report to Congress on the Status of U.S. Fisheries*. This report highlights the achievements of NOAA Fisheries, the eight Regional Fishery Management Councils (Councils), and our other partners. In 2021, the number of stocks on the overfishing list held steady, the number of overfished stocks slightly increased, and we maintained progress in rebuilding. We continue to assess the status of new stocks and implement management measures that will sustain our fisheries for future generations. Sound science, innovative management approaches, effective enforcement, meaningful partnerships, and public engagement are the core concepts that contribute to our approach.

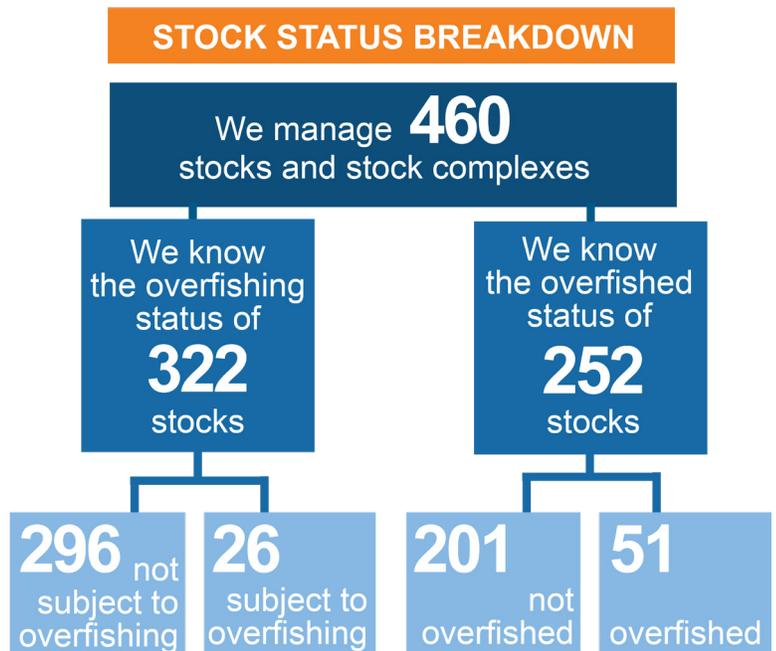
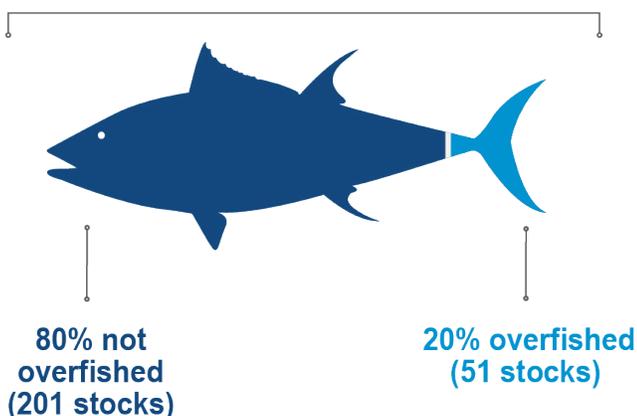
Economic Benefits of Sustainable Fisheries Management

Sustainable fisheries are the foundation of thriving fishing communities, healthy marine ecosystems, and a strong economy. Commercial, recreational, subsistence, and ceremonial fishing provide a valuable food source, important outdoor activities, and cultural significance for the nation. U.S. commercial and recreational fishing supported 1.8 million jobs and \$255 billion in sales in fishing and across the broader economy in 2019.

322 Stocks with Known Overfishing Status



252 Stocks with Known Overfished Status



The Year in Review

NOAA Fisheries manages 460 stocks or stock complexes in 46 fishery management plans. At the end of 2021, there were 26 stocks on the overfishing list and 51 on the overfished list. One stock that was rebuilt in 2013, and became overfished again, was rebuilt again this year. Since 2000, 47 stocks have been rebuilt.

We determine the status of fish stocks and stock complexes through stock assessments and by comparing catch data to an overfishing reference level. Of 460 stocks and stock complexes, 322 have a known overfishing status (296 not subject to overfishing and 26 subject to overfishing) and 252 have a known overfished status (201 not overfished and 51 overfished). Even in situations where we don't know the official stock status, we have methods to sustainably manage our fisheries. Of the stocks most targeted by fishermen, 90 percent have a known overfishing or overfished status. We track these stocks through the [Fish Stock Sustainability Index](#).

NOAA Fisheries conducted a stock assessment for one previously unassessed stock in 2021. Atlantic blacktip shark was determined to be not subject to overfishing and not overfished. Assessing previously unknown stocks significantly contributes to the science-based information used to set appropriate management measures.



* The percent of overfished stocks remains the same compared to 2020 because the total number of stocks with a known overfished status increased from 251 in 2020 to 252 in 2021.

Summary of 2021 Changes

| 2021 OVERFISHING LIST | |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Removed | Added |
| Tilefish - South Atlantic Coast Yellowfin tuna - Eastern Pacific Ocean | Snowy grouper - South Atlantic Coast Greater amberjack - Gulf of Mexico Gag - South Atlantic Coast Gag - Gulf of Mexico |
| Now Unknown Speckled hind - South Atlantic Coast Warsaw grouper - South Atlantic Coast | |
| 2021 OVERFISHED LIST | |
| Removed | Added |
| Chinook salmon - California Central Valley: Sacramento River Fall (rebuilt) | Gag - Gulf of Mexico Gag - South Atlantic Coast Snow crab - Bering Sea |
| 2021 FIRST-TIME ASSESSMENTS | |
| Blacktip shark - Atlantic - Not subject to overfishing and not overfished (previously unknown) | |

Ending Overfishing under Effective Laws

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law that governs marine fisheries management in federal waters, and under this law the United States is an international leader in fisheries management. In 2006, Congress added a requirement to use annual catch limits to end and prevent overfishing. In 2021, 90 percent of all stocks or complexes did not exceed their annual catch limits. When catch limit overages occur, NOAA Fisheries and the Councils take steps to ensure overages do not continue. Monitoring catch levels and keeping them within acceptable limits on an annual basis helps reduce the chance of overfishing and ensures long-term biological and economic sustainability.



Fisherman offloading catch at dock. Credit: NOAA Fisheries

Challenges in Fisheries Management

Stocks added to the 2021 overfishing and overfished lists are examples of the challenges we face in fisheries management. This year, new data, improved assessment methodologies, and updated stock assessments provided new information that showed some stocks are now overfished and subject to overfishing. For example, updated survey data showed Bering Sea snow crab abundance has dropped by more than 50 percent in the past 2 years and the stock is now overfished. Scientists hypothesize the decline could be caused by disease, predation by Pacific cod, or movement outside the survey area into deeper or Russian waters. A new, more accurate method was applied to the Gulf of Mexico gag stock assessment, which found the stock was overfished and subject to overfishing. In addition, new information was incorporated into the South Atlantic gag stock assessment, which found the stock was overfished and subject to overfishing. These results, while negative, give fisheries managers better information to manage these stocks. Finally, several Gulf of Mexico and South Atlantic stocks that had not been assessed in several years showed that they are now subject to overfishing. Fisheries managers will use the results of these new assessments to develop appropriate stock-specific measures that will end overfishing immediately and rebuild stocks.

Climate change continues to impact fish stocks, challenging our ability to effectively manage and rebuild stocks. Despite these challenges, working with our partners and stakeholders, we continually adapt our management response with innovative solutions using the most updated scientific information available. We are committed to reducing the number of stocks that are overfished and subject to overfishing, and to rebuilding stocks that support sustainable fisheries in our changing climate.

How We Rebuild Fisheries

When a stock becomes overfished, a Council (or, for Atlantic highly migratory species, NOAA Fisheries) must develop a rebuilding plan to rebuild the stock to a sustainable target level. Typically, the plan allows fishing to continue at a reduced level so the stock can rebuild to its target level and produce its MSY. This approach keeps fishermen and waterfronts working while stocks rebuild.

Forty-five stocks or stock complexes are currently in rebuilding plans. NOAA Fisheries monitors rebuilding stocks and, through the Council process, adjusts management measures to increase stock abundance to a target level that supports MSY. When a rebuilding stock increases above the overfished threshold, the stock is removed from the overfished list but remains under its rebuilding plan until it is fully rebuilt. Currently, of 45 stocks with rebuilding plans, six are no longer overfished but continue to be managed under rebuilding plans.



Young recreational angler fishing from a boat. Credit: iStock

Phrases to Know

The main concepts related to “overfishing” and “overfished” covered in this report are:

Maximum sustainable yield (MSY): The largest long-term average catch that can be taken from a stock under prevailing environmental and fishery conditions.

Overfishing: A stock having a harvest rate higher than the rate that produces its MSY.

Overfished: A stock having a population size that is too low and that jeopardizes the stock’s ability to produce its MSY.

Rebuilt: A stock that was previously overfished and that has increased in abundance to the target population size that supports its MSY.

What’s the difference?

As a harvest rate, overfishing is a direct result of fishing activities. Allowed to continue unchecked, overfishing is associated with many negative outcomes, including an overfished population. Current management practices—such as annual catch limits and accountability measures—reduce the likelihood of this happening.

As a population size, overfished can be the result of many factors, including overfishing, as well as habitat degradation, pollution, climate change, and disease. While overfishing is sometimes the main cause of an overfished stock, these other factors can also play a role and may affect the stock’s ability to rebuild.



Fisheries observer recording statistics. Credit: NOAA Fisheries

The Science Behind Stock Status

A scientific analysis of the abundance and composition of a fish stock, as well as the degree of fishing intensity, is called a stock assessment. Stock assessments are subject to regional peer review as part of the process to ensure that management decisions are based on the best scientific information available. In fiscal year 2021, NOAA Fisheries conducted 170 stock assessments.

Fishery management plans must specify objective and measurable criteria, called reference points, to determine if a stock is overfished or subject to overfishing. The Councils and NOAA Fisheries use information from stock assessments to calculate reference points and determine whether catch limits have successfully ended or prevented overfishing and whether a stock is overfished. Outside the stock assessment process, NOAA Fisheries may also use a comparison of catch to the overfishing limit to determine if a stock is subject to overfishing. If the catch-to-overfishing-limit comparison is used, an overfishing determination is made annually. If a stock assessment is used, due to timing of the next stock assessment it may take several years before we are able to determine if catch limits successfully ended overfishing.

Overfishing and Overfished Stocks as of December 31, 2021

■ 51 On Overfished List

North Pacific

- Blue king crab – Pribilof Islands
- Blue king crab – St. Matthew Island
- Snow crab – Bering Sea

Pacific

- Chinook salmon – Klamath River fall
- Coho salmon – Queets¹
- Coho salmon – Juan de Fuca¹
- Pacific sardine - Northern subpopulation

Pacific and Western Pacific

- ● Pacific bluefin tuna – Pacific¹
- Swordfish – Eastern Pacific^{1,2}

Western Pacific

- ● Striped marlin – Western/Central Pacific¹
- Seamount Groundfish Complex – Hancock Seamount
- ● American Samoa Bottomfish Multi-species Complex
- Guam Bottomfish Multi-species Complex
- ● Oceanic whitetip shark – Western/Central Pacific¹
- Silky shark – Western/Central Pacific

Gulf of Mexico

- ● Greater amberjack
- Cobia
- Lane snapper
- Gulf of Mexico Jacks Complex
- ● Gag - Gulf of Mexico

Caribbean

- Goliath grouper
- Nassau grouper
- Queen conch

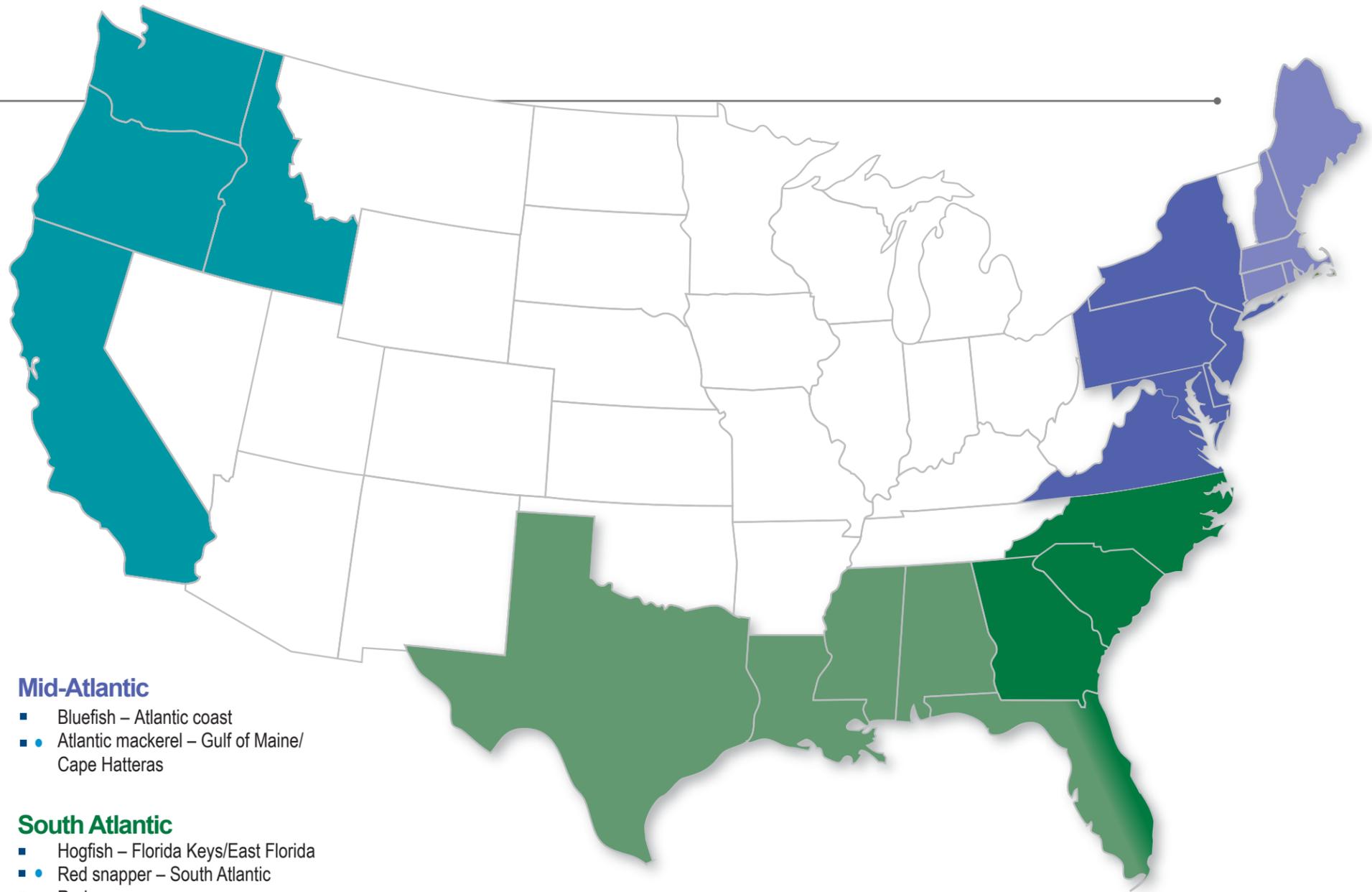
● 26 On Overfishing List

New England

- ● Atlantic cod – Georges Bank
- ● Atlantic cod – Gulf of Maine
- Windowpane – Gulf of Maine/Georges Bank
- Witch flounder
- ● Yellowtail flounder – Georges Bank
- Yellowtail flounder – Southern New England/Mid-Atlantic
- Thorny skate – Gulf of Maine
- Atlantic halibut
- Atlantic salmon
- Atlantic wolffish
- Ocean pout
- Winter flounder – Southern New England
- Winter flounder – Georges Bank
- ● Red hake – Southern Georges Bank/Mid-Atlantic
- White hake – Gulf of Maine/Georges Bank
- Atlantic herring

Highly Migratory Species

- ● Blacknose shark – Atlantic
- ● Blue marlin – Atlantic¹
- ● Dusky shark – Atlantic
- White marlin – Atlantic¹
- ● Scalloped hammerhead – Atlantic
- Porbeagle shark – Atlantic¹
- Sandbar shark – Atlantic
- ● Bigeye tuna – Atlantic¹
- ● Shortfin mako – North Atlantic¹

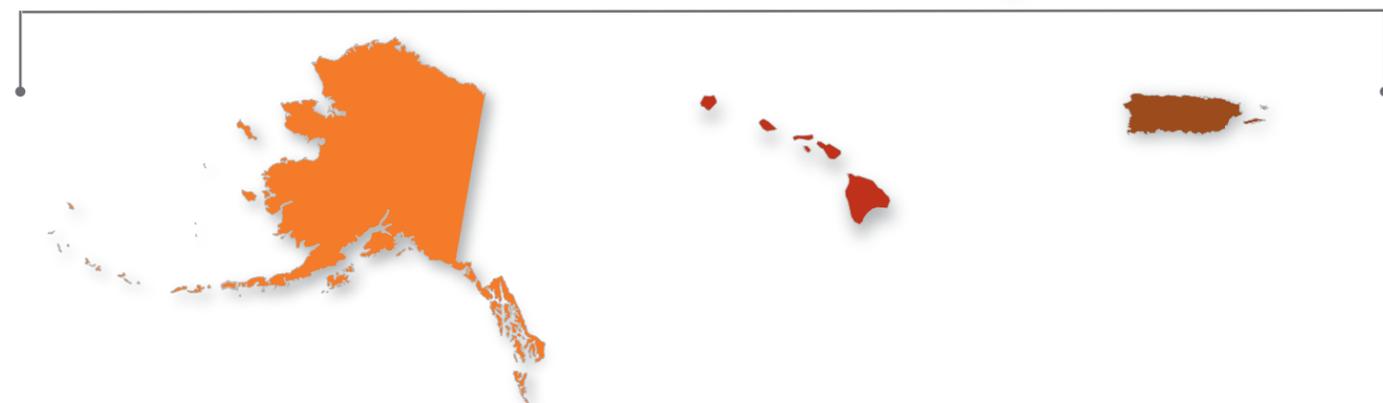


Mid-Atlantic

- Bluefish – Atlantic coast
- ● Atlantic mackerel – Gulf of Maine/Cape Hatteras

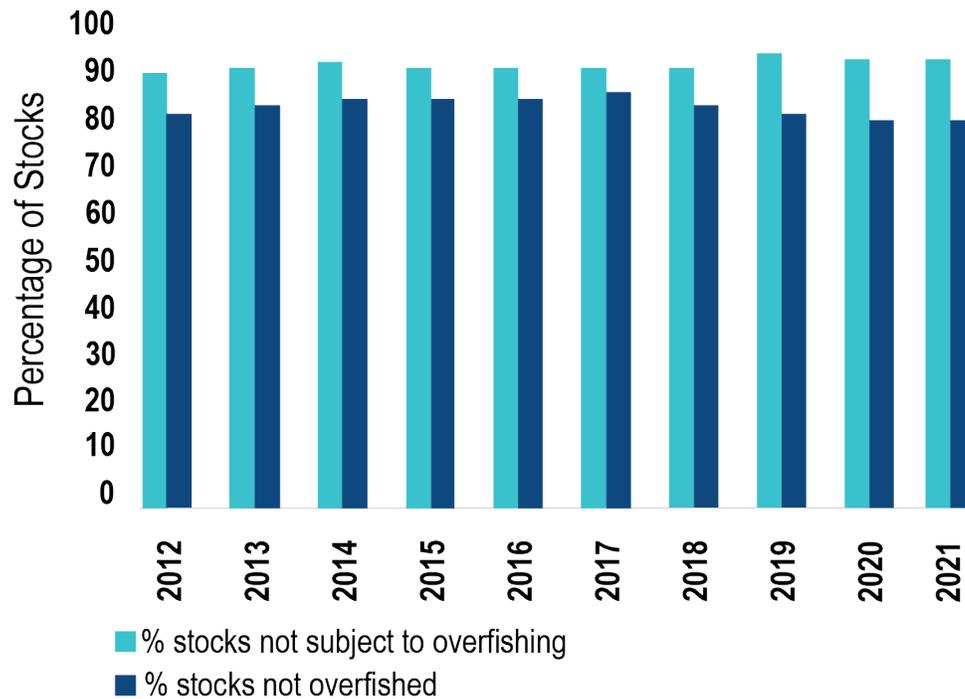
South Atlantic

- Hogfish – Florida Keys/East Florida
- ● Red snapper – South Atlantic
- ● Red porgy
- ● Snowy grouper
- ● Gag – South Atlantic
- Red grouper – South Atlantic



¹ Stock is fished by U.S. and international fleets under formal international agreement
² The geographic boundary of this stock extends from Mexico south and west to the Palmyra Atoll.

Percentage of Stocks Not Subject to Overfishing and Not Overfished 2012–2021



Pandemic Relief and Feeding Those in Need

In 2021, the COVID-19 pandemic continued to cause widespread impacts to the fishing industry. To assist those impacted, NOAA Fisheries allocated \$600 million in fisheries assistance funding included in the Coronavirus Aid, Relief, and Economic Security Act (or CARES Act) and the Consolidated Appropriations Act of 2021. As of December 31, 2021, all the funding had been obligated and over \$350 million had been disbursed. COVID-19 grant initiatives also made money available to purchase local seafood from fishermen, while feeding those in need. Several million pounds of seafood was donated including tuna in Hawaii, haddock chowder and oysters in New England, rockfish off California, shrimp in Mississippi, and snapper and grouper in Florida. Some fishermen have used this opportunity to make their products permanently available in grocery stores and dining halls, and continue to supply healthy seafood to food pantries.



Haddock chowder in New England food pantry. Photo courtesy of Cape Cod Commercial Fishermen's Alliance / Doreen Leggett.

Teaming Up with Our Partners to Advance the State of Knowledge

We rely on our partners to help solve research questions and improve our understanding of the fisheries we manage. Scientists and anglers recently teamed up to study the relationship between deep-sea coral habitat and queen snapper in the Caribbean. They also discovered that queen snapper reach a maximum age of 45 years, not the previously estimated 8 years. This information significantly revises our understanding of queen snapper that can be used in future stock assessments. Another cooperative research project found that some deep-water rockfish have a 90 percent survival rate if returned to the water using a weighted line that releases the fish at the depth it was caught. These findings will be shared widely with recreational anglers to encourage the use of descending devices to reduce mortality of released fish.



*Fisheries biologist holding up a large queen snapper.
Credit: NOAA Fisheries/Kate Overly*

Improving Management Under Changing Climate Conditions

NOAA Fisheries continues to incorporate new information and methodologies to respond to climate change that threatens our ocean fisheries. Climate change can increase harmful algal blooms, reduce ecosystem productivity, impact organisms that have skeletons or shells, and cause shifts in the Gulf Stream. This year NOAA Fisheries released its first ecosystem status report for the South Atlantic Region, which documents environmental changes in the South Atlantic. Information from this new report and existing ecosystem status reports for other regions will be used to track changes in complex ocean conditions, understand the correlation between environmental conditions and fisheries, and support advances toward ecosystem-based fisheries management. New modeling methods have also been developed to predict how marine heatwaves could impact important fish stocks, such as Gulf of Alaska cod and pollock. This new method will allow fishery managers to develop resilient management appropriate for future environmental conditions.

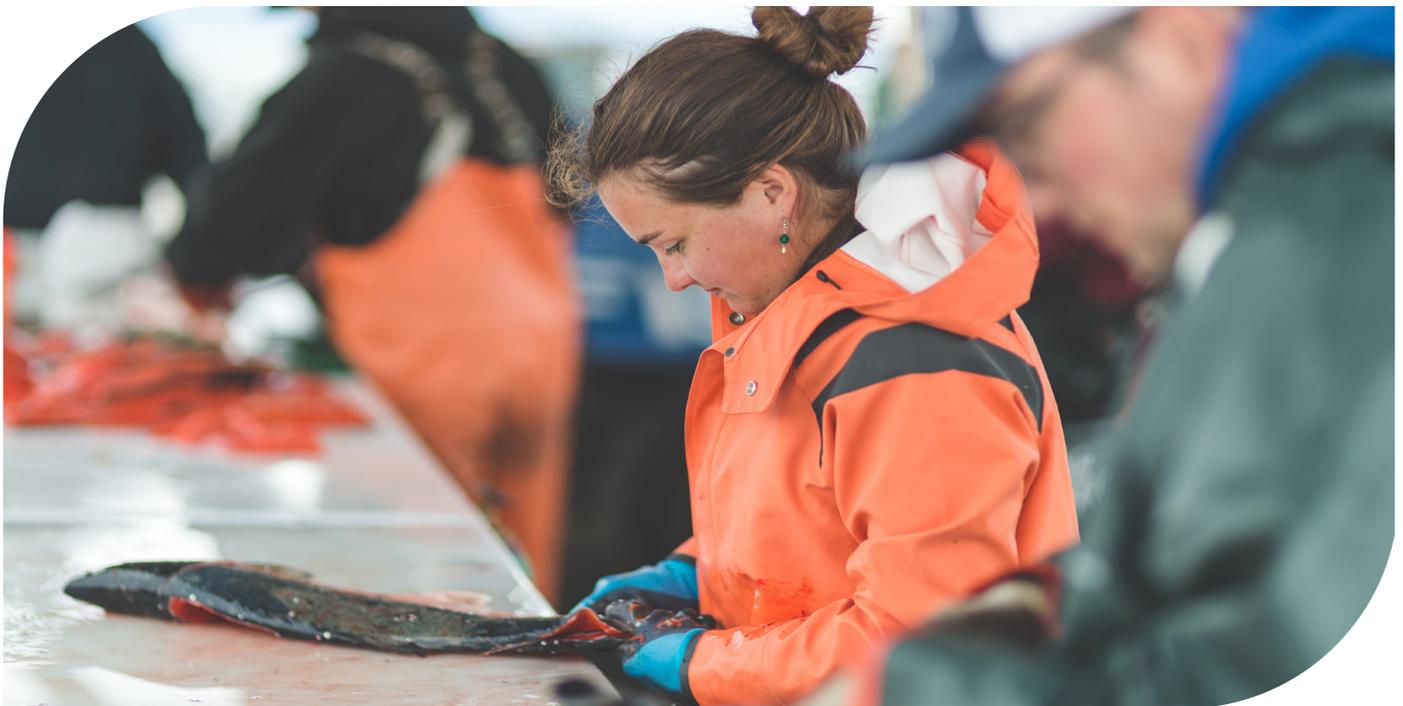


Alaska pollock on fish deck. Credit: NOAA Fisheries

Our Proud Tradition of Sustainable Fisheries

More than 40 years of managing our nation's fisheries under the MSA has positioned NOAA Fisheries as a global leader in sustainable fisheries management. Our commercial fishing industry contributes \$68 billion in value-added revenue to the U.S. economy. Harvest quotas, size limits, and other management measures are the key to sustainably harvested U.S. seafood products that continue to support a strong economy and increase consumer confidence. The United States has the largest and most diverse recreational fisheries in the world, contributing \$50 billion to the U.S. economy. NOAA Fisheries continues to make recreational fisheries a top priority and launched several initiatives in 2021, including the release of the first ever educational recreational fisheries video series. To meet the demands of a growing population we are working to boost seafood production through aquaculture initiatives.

NOAA Fisheries continues to engage with partners to accomplish the work necessary to keep fisheries thriving across the country. We are committed to working with Congress, the Councils, our state partners, and other stakeholders to end overfishing and rebuild stocks so that our sustainable fisheries continue to support a strong economy.



Filleting a freshly caught salmon in Alaska. Credit: iStock



U.S. Secretary of Commerce

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