

# Fisheries Economics of the United States 2018

Economics and Sociocultural  
Status and Trends Series

**U.S. Department of Commerce**  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
NOAA Technical Memorandum NMFS-F/SPO-225  
November 2021



This document is still undergoing web accessibility work to meet Section 508 compliance.

For assistance with this document, please contact NOAA Fisheries Office of Science and Technology at (301) 427-8100 or visit <https://www.fisheries.noaa.gov/contact/office-science-and-technology>





**Front cover:** André Price hook and line fishing for black sea bass off of Ocean City, Maryland.

Photo: NOAA Fisheries/Noelle Olsen

**Inside cover:** Closeup of a trawl net. Photo: Pacific Fishery Management Council/Jennifer Gilden

---

# Fisheries Economics of the United States 2018

Economics and Social Analysis Division  
Office of Science and Technology  
NOAA Fisheries (NMFS)  
1315 East-West Highway, 12th floor  
Silver Spring, MD 20910

## NOAA TECHNICAL MEMORANDUM NMFS-F/SPO-225 NOVEMBER 2021



### **U.S. Department of Commerce**

Gina M. Raimondo, Secretary of Commerce

### **National Oceanic and Atmospheric Administration**

Dr. Richard W. Spinrad, NOAA Administrator

### **National Marine Fisheries Service**

Janet Coit, Assistant Administrator for Fisheries



---

## NOAA Fisheries Publications

Each year NOAA Fisheries produces three annual reports covering different aspects of the status of United States marine fisheries.

**Status of Stocks** is an annual report to Congress on the status of U.S. fisheries and is required by the Magnuson-Stevens Fishery Conservation and Management Act. This report, which is published each spring, summarizes the number of stocks on the overfished, overfishing, and rebuilt lists for U.S. federally managed fish stocks and stock complexes. The report also shows trends over time, discusses the value and contributions of our partners, and highlights how management actions taken by NOAA Fisheries have improved the status of U.S. federally managed stocks. For example, the 2017 report shows that the number of stocks on the overfished list just reached a new all-time low.

<https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates#2018-quarterly-updates>

**Fisheries of the United States**, published each fall, has been produced in its various forms for more than 100 years. It is the NOAA Fisheries yearbook of fishery statistics for the United States. It provides a snapshot of data, primarily at the national level, on U.S. recreational catch and commercial fisheries landings and value. In addition, data are reported on U.S. aquaculture production, the U.S. fishery processing industry, imports and exports of fishery-related products, and domestic supply and per capita consumption of fishery products. The focus is not on economic analysis, although value of landings, processed products, and foreign trade are included.

<https://www.fisheries.noaa.gov/national/commercial-fishing/fisheries-united-states>

**Fisheries Economics of the United States**, published each fall, provides a detailed look at the economic performance of commercial and recreational fisheries and other marine-related sectors on a state, regional, and national basis. The economic impact of commercial and recreational fishing activities in the United States is also reported in terms of employment, sales and value-added impacts. The report provides management highlights for each region that include a summary of stock status, updates on catch share programs, and other selected management issues.

<https://www.fisheries.noaa.gov/national/commercial-fishing/fisheries-economics-united-states>

## Suggested Citation:

National Marine Fisheries Service. 2021. Fisheries Economics of the United States, 2018. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-225, 246 p.

## A copy of this report may be obtained from:

Economics and Social Analysis Division  
Office of Science and Technology  
NOAA Fisheries (NMFS)  
1315 East-West Highway, 12th floor  
Silver Spring, MD 20910

## Or online at:

<https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-economics-united-states>

# Contents

**Preface..... v**  
**Key Terminology ..... vi**

**National Overview..... 1**  
United States Summary .....2  
United States Tables ..... 19

**North Pacific Region..... 23**  
North Pacific Summary ..... 24  
Alaska Tables ..... 31

**Pacific Region..... 35**  
Pacific Summary..... 36  
Pacific Tables ..... 43  
California Tables ..... 47  
Oregon Tables ..... 51  
Washington Tables..... 55

**Western Pacific Region..... 59**  
Western Pacific Summary ..... 60  
Hawai'i Tables ..... 67

**New England Region ..... 71**  
New England Summary ..... 72  
New England Tables ..... 79  
Connecticut Tables..... 83  
Maine Tables..... 87  
Massachusetts Tables..... 91  
New Hampshire Tables ..... 95  
Rhode Island Tables..... 99

**Mid-Atlantic Region ..... 103**  
Mid-Atlantic Summary..... 104  
Mid-Atlantic Tables..... 111  
Delaware Tables ..... 115  
Maryland Tables ..... 119  
New Jersey Tables ..... 123  
New York Tables ..... 127  
Virginia Tables..... 131

**South Atlantic Region..... 135**  
South Atlantic Summary..... 136  
South Atlantic Tables..... 141  
East Florida Tables..... 145  
Georgia Tables ..... 149  
North Carolina Tables ..... 153  
South Carolina Tables..... 157

**Gulf of Mexico Region..... 161**  
Gulf of Mexico Summary..... 162  
Gulf of Mexico Tables ..... 169  
Alabama Tables ..... 173  
West Florida Tables ..... 177  
Louisiana Tables ..... 181  
Mississippi Tables..... 185  
Texas Tables ..... 189

**Data Sources ..... 199**  
**Publications..... 203**  
**Resources..... 233**  
**Glossary ..... 237**





Haddock being taken out at Fisherman's Wharf in Gloucester, MA.  
Photo: New England Fishery Management Council



---

# Preface

## Fisheries Economics of the United States, 2018

Fisheries Economics of the United States, 2018, is the thirteenth volume in this annual series, which is intended to provide the public with easily accessible economic information about the nation's commercial and recreational fishing activities and fishing-related industries. Summary data is available online in the FEUS tool, available from <https://www.st.nmfs.noaa.gov/data-and-tools/FEUS/explore-the-data>.

This year's report covers the years 2009 to 2018 and provides descriptive statistics for the following categories: economic impacts of the commercial fishing and seafood industry; commercial fisheries landings, revenue, and price trends; saltwater angler expenditures and economic impacts of marine recreational fishing; recreational fishing catch, effort, and participation rates; and employer and non-employer establishments, payroll, employees, and annual receipt information for fishing-related industries.

The report also provides management highlights for each region that include a summary of stock status, updates on catch share programs, and other selected management issues. Economic performance indicators for catch share programs are reported.

## Sources of Data

Information in this report came from many sources. Commercial landings, revenue, and price data, as well as recreational fishing effort and participation data, were primarily obtained from the Fisheries Statistics Division, Office of Science and Technology, NOAA Fisheries. Other data sources included the NOAA Alaska Fisheries Science Center; Alaska Department of Fish and Game; California Department of Fish and Game; Oregon Department of Fish and Wildlife; Washington Department of Fish and Wildlife; the Pacific Coast Fisheries Information Network (PacFIN); Texas Parks and Wildlife Department; and Western Pacific Fisheries Information Network (WPacFIN). Economic impacts from the commercial fishing and seafood industry and recreational fishing sectors are from two separate national IMPLAN models of the Economics and Sociocultural Analysis Division, Office of Science and

Technology, NOAA Fisheries. Fishing-related industry information was obtained from the U.S. Census Bureau, Bureau of Economic Analysis, and the Bureau of Labor Statistics.

## Acknowledgments

Many people participated in the production of this report. Shelley Arenas and Alex Richardson are the editors of this report series; Rita Curtis, Sabrina Lovell, and Alex Richardson were primary authors and analysts on this edition of Fisheries Economics of the United States. Key collaborators include Emily Markowitz, Molly Graham, Drew Kitts, Noelle Olsen, Lauren Dolinger Few, Michael Liddel, and Michael Lewis. Other colleagues who provided information and expertise included Mike Brown (California Department of Fish and Wildlife), and Jason Edwards and Rob Ames (Pacific States Marine Fisheries Commission). The report's design and layout was done by Avi Litwack and Jacqui Fenner.

## Address all comments and questions to:

Kathryn Cuff | [Kathryn.Cuff@noaa.gov](mailto:Kathryn.Cuff@noaa.gov)

## Economics and Social Analysis Division

Office of Science and Technology  
NOAA Fisheries (NMFS)  
1315 East-West Highway, 12<sup>th</sup> floor  
Silver Spring, MD 20910-3282  
Phone: 301-427-8121



# Commercial Fisheries

## What Does the Term Mean?

Commercial fisheries, in this report, refers to fishing operations that sell their catch for profit. It does not include saltwater anglers who fish for sport or subsistence fishermen. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species and species groups.

## Metrics Definitions<sup>1</sup>

### Economic Impacts

The employment, personal income, and output generated by the commercial harvest sector and other major components of the U.S. seafood industry.

### Landings Revenue

The price that fishermen are paid for their catch.

### Landings

The poundage or number of fish unloaded by commercial fishermen or brought to shore.

### Ex-vessel Prices

The price received by a captain, at the point of landing, for the catch.

## Frequently Asked Questions

### What are fish caught with in commercial fishing?

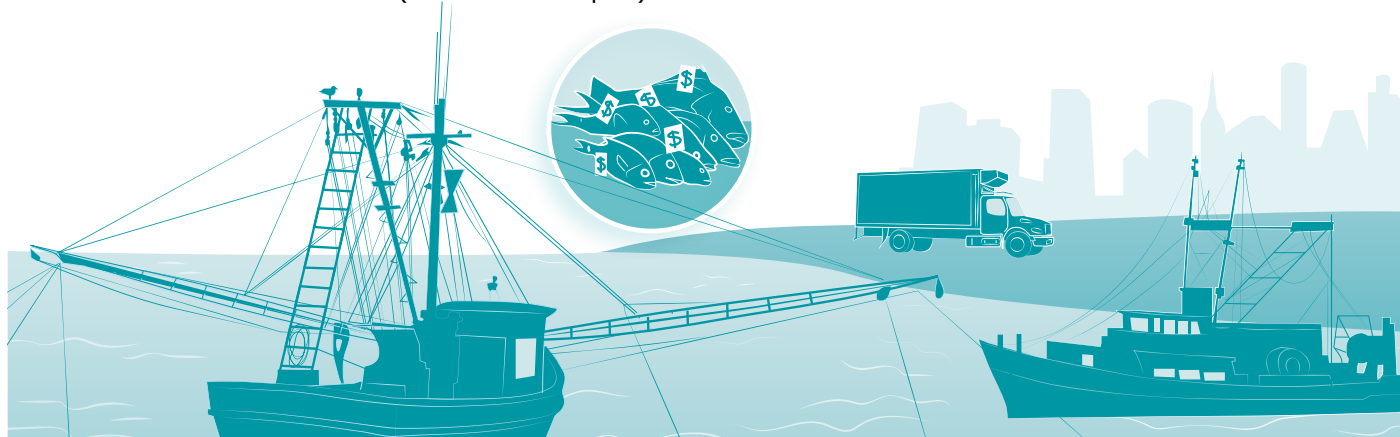
Fish can be caught using a variety of gear, including potts and traps, trawls and seines, gillnets, dredges, and hooks and lines.

### What happens to seafood caught by commercial fishermen?

Fish caught by commercial fishermen are first processed and packaged. Then they are sold to various establishments for consumption, such as restaurants and supermarkets. They can also be used as animal food and for medical purposes (such as fish oil pills).

### Does the United States get seafood from anywhere else?

Not all fish are caught by U.S. commercial fishermen. A large percent of the seafood the U.S. receives is imported.



<sup>1</sup> For full definitions, see the Glossary at the back of this publication.

# Recreational Fisheries

## What Does the Term Mean?

Recreational fisheries, or recreational fishing, refer to fishing for pleasure rather than selling the fish for profit (i.e., commercial fishing) or for subsistence. The recreational fisheries section of Fisheries Economics of the U.S. reports on angler trips, participation, expenditures and economic impacts, and catch of key species and species groups. Only saltwater, or marine, recreational fishing is included in FEUS.

## Metrics Definitions

### Economic Impacts and Expenditures

The employment, sales, and personal income generated by expenditures on fishing trips and fishing-related durable goods (i.e. equipment used for recreational fishing).

### Fishing Trips/ Effort

The number of fishing trips taken by recreational fishermen (anglers).

### Participation

The number of anglers who fish in a given state or region. Anglers can be from in-state or out-of-state and from a coastal county or non-coastal county.

### Harvest and Release

The total number of fish either: 1) caught and kept (**harvested**), or 2) caught and **released**, by recreational anglers from an area over a period of time. Total catch is the sum of the number of fish harvested and released.

## Frequently Asked Questions

### How do anglers affect the fishing economy?

When anglers participate in fishing activities, they support sales and employment in recreational fishing and other types of businesses. Anglers buy fishing equipment from bait and tackle shops, rent or buy boats, or pay to have others take them on charter boats to fish. They may also pay for food and drink at local restaurants, purchase gas for their boat, and stay in hotels for overnight fishing trips.

### What do anglers spend their money on?

**Durable goods**, such as fishing tackle and boat, vehicle, and second home expenses. **Trips**, which can be taken in one of three modes: as for-hire (charter or party boat), private (or rental boat), and shore (fishing from shore). Some examples of trip expenditures include fuel, bait, ice, and charter or guide fees.

### What do anglers do with their catch?

Some anglers catch fish to eat (i.e., harvest), while others practice catch and release. In recreational fishing, anglers do not sell the fish they catch for profit.





# Marine Economy

## What Does the Term Mean?

The “Marine Economy,” in this report, refers to the economic activity generated by sectors of the economy that depend directly on oceans (or Great Lakes). We report on two industry sectors within the marine economy: 1) seafood sales and processing; and 2) transport, support, and marine operations. Information such as the number of establishments, number of employees, and annual payroll for these fishing and marine-related industries is used to determine their relative levels of economic activity in a state.

## Metrics Definitions

### Seafood Sales and Processing

These sectors are a direct representation of the Establishments, Employees, Sales, and Payroll for seafood processors, wholesalers, and retailers that buy fish from commercial fishermen and distribute to consumers.

### Transport, Support, and Marine Operations

The various sectors that contribute to the overall marine economy that may or may not support the fishing economy.

## Frequently Asked Questions

### Does the marine economy include commercial and recreational fisheries?

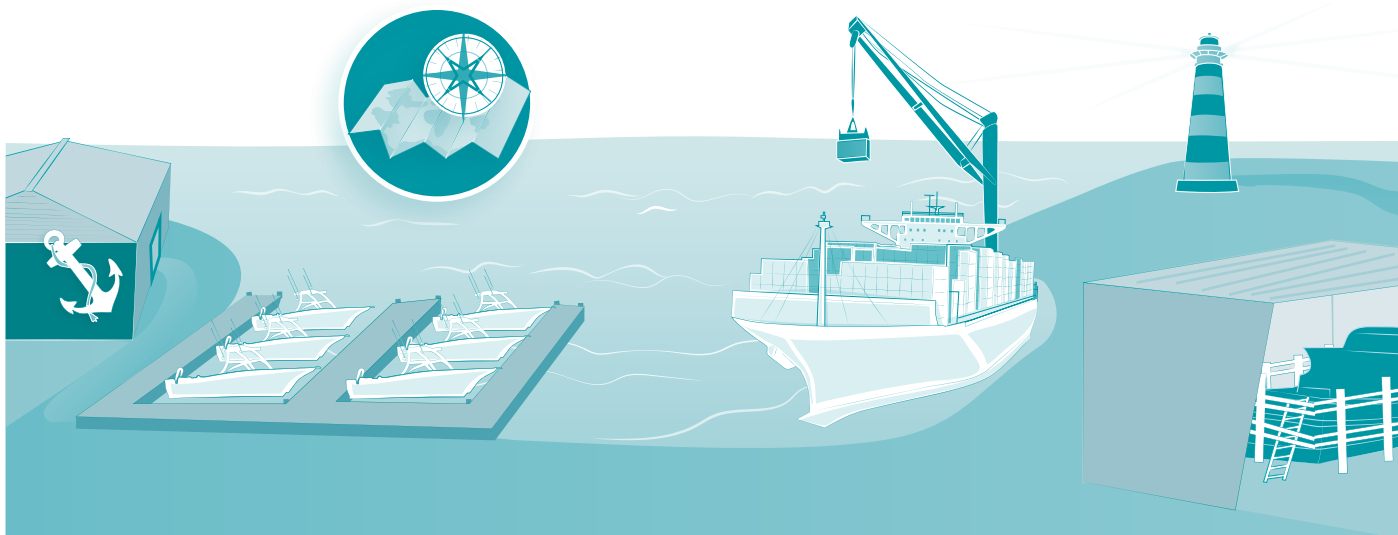
Yes, commercial and recreational fisheries contribute to the overall marine economy.

### What marine economy sectors, featured in the report, are related to commercial and recreational fisheries?

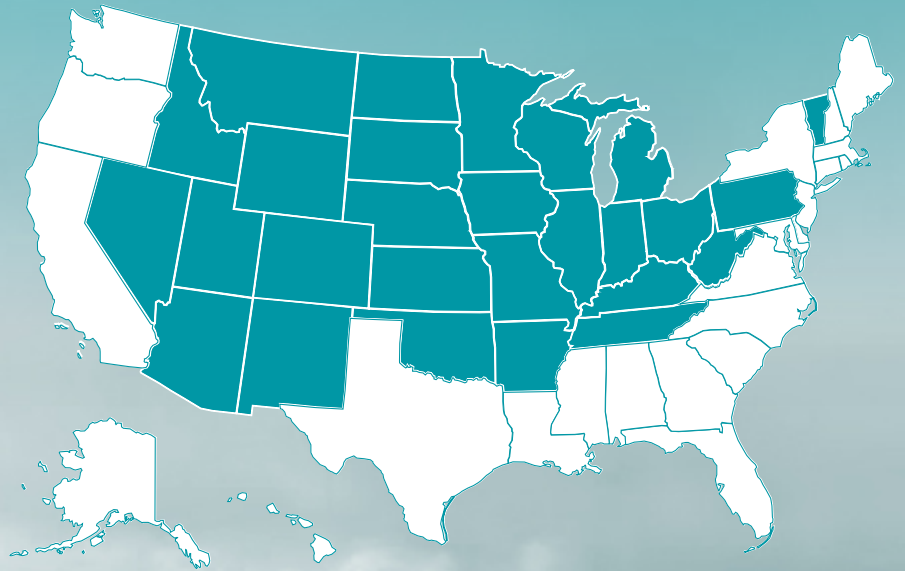
The seafood product preparation & packaging, wholesale, and retail seafood sales sectors are major parts of the commercial fishing industry. The Marinas, Navigational Services, Port & Harbor operations, and Ship & Boat Building sectors provide goods and services used in both commercial and recreational fisheries.

### Why does the report include sectors that are independent of the fishing economy?

Information on sectors that are independent of the fishing economy, like freight transportation, provides context for how national and regional economies are affected by the use of ocean resources.



# National Overview



A pollock catcher processor, *Arctic Fjord*, leaving Dutch Harbor, Alaska after an offload to go fishing for more pollock.  
Photo: Arctic Storm Management Group/Sarah Nayani



## MANAGEMENT CONTEXT

The authority to manage federal fisheries in the United States was granted to the Secretary of Commerce by the Magnuson-Stevens Fishery Conservation and Management Act (P.L. 94-265 as amended by P.L. 109-479). NOAA Fisheries is the federal agency with delegated authority from the Secretary of Commerce to oversee fishing activities in federal waters. Federal fisheries are generally defined as fishing activities that take place in the U.S. Exclusive Economic Zone (EEZ, between 3 and 200 nautical miles from the coastline). Generally, individual states retain management authority over fishing activities within three nautical miles of their coasts.

### Regional Fishery Management Councils

- North Pacific
- Pacific
- Western Pacific
- New England
- Mid-Atlantic
- South Atlantic
- Gulf of Mexico
- Caribbean

Nationwide, 46 fishery management plans (FMPs) provide a framework for managing the harvest of 479 fish stocks and stock complexes.<sup>1</sup> These plans aim to manage the harvest of fish in U.S. and shared waters, using sound scientific research, to maximize fishing opportunity while ensuring the sustainability of fisheries and fishing communities. Regional Fishery Management Councils (FMCs) develop FMPs in eight regions nationwide: North Pacific, Pacific, Western Pacific, New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, and Caribbean. After an FMP is developed, the Secretary of Commerce in consultation with NOAA Fisheries must approve it before it is implemented.

Fishery management plans must specify objective and measurable criteria to determine when a stock is overfished or subject to overfishing. Enough information exists to determine the overfishing status for 321 (or 67%) of the 479 stocks and stock complexes. Of these 321, 28 stocks are subject to overfishing (or 9% of stocks with known status). The overfished status of 244 (or 51%) of the 479 stocks and stock complexes is known. Of these 244 stocks, 43 (or 18% of stocks with known status) are categorized as overfished.<sup>2</sup>

## Transboundary and International Fisheries

NOAA Fisheries is also actively involved in negotiating conservation and management measures, including total allowable catch levels, fishery allocations, and monitoring and control schemes, for internationally shared fisheries resources. Shared fisheries resources include those in areas where the EEZ of the U.S. overlaps with other nations (transboundary areas and in areas beyond the U.S. EEZ, i.e., international waters or the high seas. The Gulf of Alaska and the Gulf of Maine are examples of these transboundary areas. An area in the Bering Sea outside the EEZs of Canada, Japan, and Russia, called the Donut Hole, is an example of international waters. Loss of sea ice will create new transboundary areas and international waters in the Arctic.

Regional Fishery Management Organizations (RFMOs) are multinational organizations with interests in internationally shared fish stocks and associated fishing activities. Primary objectives of these RFMOs are to research, assess, and adopt measures for the conservation and coordinated management of target species, such as bigeye tuna. Some RFMOs also collect data and evaluate and adopt measures for the conservation and scientific assessment of non-target species, also known as bycatch. Non-target species include seabirds, marine mammals, sea turtles, and fish species caught incidentally while fishing for target species. The commitment to conserving and protecting all species associated with, or affected by, fishing activities is outlined in the Food and Agriculture Organization's (FAO) Code of Conduct for Responsible Fisheries established in 1995. NOAA Fisheries participates in various international and regional fisheries management organizations that promote international cooperation to achieve effective, responsible marine stewardship and ensure sustainable fisheries management. These entities are listed by ocean basin below.<sup>3</sup>

<sup>1</sup> Fishery management plans and fishery ecosystem plans for each region covered in this report are listed in their respective sections. The four FMPs developed by the Caribbean Fishery Management Council and the Atlantic Highly Migratory Species FMP developed by NOAA Fisheries are not included in this report.

<sup>2</sup> NOAA Fisheries. 2019. Status of Stocks 2018. Office of Sustainable Fisheries. [Available at <https://www.fisheries.noaa.gov/feature-story/status-stocks-2018>]

<sup>3</sup> See <https://www.fisheries.noaa.gov/international-affairs/international-and-regional-fisheries-management-organizations> (accessed September 29, 2021).

**Pacific**

- Pacific Salmon Commission
- International Pacific Halibut Commission
- Inter-American Tropical Tuna Commission
- Western and Central Pacific Fishery Commission

**Atlantic**

- International Commission for the Conservation of Atlantic Tunas
- North Atlantic Salmon Conservation Organization
- Northwest Atlantic Fisheries Organization

**Antarctic**

- Commission for the Conservation of Antarctic Marine Living Resources

An issue of particular concern for NOAA Fisheries is illegal, unreported, and unregulated (IUU) fishing activities. IUU fishing generally refers to fishing that violates national laws or internationally agreed conservation and management measures in effect in oceans around the world. IUU fishing can include fishing without a license or quota for certain species, unauthorized trans-shipments to cargo vessels, failing to report catches or making false reports, keeping undersized fish or fish that are otherwise protected by regulations, fishing in closed areas or during closed seasons, and using prohibited fishing gear.

NOAA Fisheries is actively collaborating with other federal agencies as part of the National Ocean Council Committee on IUU Fishing and Seafood Fraud. This network of agencies works together to implement measures outlined in an action plan developed by the Presidential Task Force on Combating IUU Fishing and Seafood Fraud. As part of this effort, in December 2016 NOAA Fisheries issued the final rule establishing the Seafood Import Monitoring Program to further combat IUU fishing practices and to identify misrepresented seafood imports before they enter the U.S. market. The data collected under this program allows certain priority species, identified as especially vulnerable to IUU fishing and seafood fraud, to be traced from the point of entry into U.S. commerce back to the point of harvest or production to verify whether it was lawfully harvested or produced. For 11 of the 13 species/species groups covered in the final rule, the rule went into

effect January 1, 2018. On December 31, 2018, it became mandatory for foreign shrimp products to be accompanied by harvest and landing data and for importers to maintain chain of custody records for shrimp and abalone imports entering the U.S.<sup>4</sup> By not allowing IUU fish products into the U.S., the Seafood Import Monitoring Program helps level the playing field for commercial fishermen by reducing unfair competition in the marketplace.

## Threatened and Endangered Species

NOAA Fisheries is also the lead agency for the conservation and protection of marine and anadromous species that fall within the purview of the Endangered Species Act (ESA). Currently, there are 165 threatened and endangered marine species under the ESA (see Table 1).

**Table 1. Endangered and Threatened Species under NOAA Fisheries Jurisdiction<sup>5</sup>**

| Species Group                                  | Number of Species/<br>Sub-species Populations |
|--|---|
| Whales   | 16  |
| Dolphins and Porpoises                         | 8   |
| Seals and Sea Lions                            | 12  |
| Sea Turtles                                    | 25  |
| Fish and Sharks                                | 75  |
| Corals and Marine Invertebrates                | 28  |
| Plants   | 1   |
| Total Threatened and Endangered Marine Species | 165   |

In addition to threatened and endangered marine and anadromous species, NOAA Fisheries also helps identify candidate and proposed species. Candidate species are actively being considered for listing as endangered or threatened under the ESA. These species also include those for which NOAA Fisheries has initiated a status review that it has announced in the *Federal Register*. Proposed species are candidate species that were found to warrant listing as either threatened or endangered. These species were officially proposed as such in a *Federal Register* notice after the completion of a status review and consideration of other protective measures. Currently, 12 candidate species and no proposed species are under consideration for listing.

NOAA Fisheries is also responsible for protecting marine mammals under the Marine Mammal Protection Act.<sup>6</sup> In authorizing this act in 1972, Congress recognized that marine mammal species or stocks may be in danger of

<sup>4</sup> See <https://www.iuufishing.noaa.gov/recommendationsandactions/recommendation1415/finalruletraceability.aspx> (accessed September 29, 2021).

<sup>5</sup> NOAA Fisheries Office of Protected Resources Endangered Species Conservation website (<https://www.fisheries.noaa.gov/topic/endangered-species-conservation#conservation-&-management>) (accessed September 22, 2021). Note that on the web site, killer whales and false killer whales are listed under both the Whales and Dolphins and Porpoises categories. Here they are only enumerated under the Dolphins and Porpoises category.

<sup>6</sup> The U.S. Fish and Wildlife Service protects walrus, manatees, otters, and polar bears.

extinction or depletion as a result of human activities; marine mammal species or stocks should not be allowed to fall below their optimum sustainable population levels; measures should be taken to replenish marine mammal species or stocks; there is inadequate knowledge of the marine mammal ecology and population dynamics; and marine mammals have proven to be resources of great international significance. NOAA Fisheries engages in activities such as preventing the harassment, capture, or killing of marine mammals; preparing marine mammal stock assessments; and studying interactions between marine mammals and fisheries.

## Essential Fish Habitats

Sustainable commercial and recreational fisheries depend on healthy habitats. These habitats include rivers, estuaries, coastal waters, and the open ocean where marine and anadromous species feed, grow, and reproduce. Consideration of these habitat areas is part of an ecosystem-based management approach for managing fisheries in a more sustainable and holistic manner. Since 1996, federal fishery management plans are required to identify and describe essential fish habitat (EFH) for all federally managed species. Habitat areas that are necessary for a fish species' growth, reproduction, and development are considered EFH. To the extent practicable, NOAA Fisheries and the FMCs must minimize adverse effects to EFH caused by fishing.

Though not required, Habitat Areas of Particular Concern (HAPC) can be identified to help focus EFH conservation efforts. The HAPC designation alone does not confer additional protection to or place restrictions on an area, but helps to focus EFH conservation, management, and research priorities. HAPC designation is a valuable way to acknowledge areas based on their ecological importance, rarity, and/or vulnerability, indicating a greater need for conservation and management. To date, approximately 299 HAPCs have been designated, including a combination of habitat types, discrete areas, and waterways. Some of these areas do overlap.

In order to help prioritize efforts related to EFH, NOAA

Fisheries held an EFH Summit in 2016 and then published an updated Marine Fisheries Habitat Assessment Improvement Plan in 2018.<sup>7</sup> Both efforts focused on identifying habitats that are most essential for sustaining federally managed species and on supporting research to understand how these habitats directly contribute to fisheries productivity. A continued priority is refining EFH and HAPC designations for habitat-limited species and habitats that play a key role in offshore stock productivity.

## Catch Share Programs

Market-based management tools are used by fishery managers to reduce overcapitalization, increase the economic viability of fisheries, and promote individual accountability for harvest and harvesting practices. Catch share programs are one of these tools and encompass a range of management strategies that share a common feature: A secure share of fish is dedicated to individual fishermen, cooperatives, fishing communities, and other entities for their exclusive use. In 2010, the NOAA catch share policy was released to encourage well-designed catch share programs to help maintain or rebuild fisheries.<sup>8</sup> The policy also aims to sustain fishermen, communities, and vibrant working waterfronts, including the cultural and resource-access traditions that have been part of this country since its founding.

Currently, there are 17 federal catch share programs nationwide. These programs include limited access privilege programs (LAPPs), individual fishing quota programs (IFQs), individual transferable quota programs (ITQs), fishing community development quota programs (CDQs), fishing cooperatives, and fishing sectors.<sup>9</sup> Implementation dates of these programs span three decades, with six programs established in the 1990s and six established since 2010 (see Table 2). Eleven programs manage a single species or, in some cases, two species but as separate management units; the other six programs manage multiple species. Seven of the programs operate in the North Pacific (Alaska) Region.

<sup>7</sup> The Habitat Assessment Improvement Plan Update is available at [https://spo.nmfs.noaa.gov/sites/default/files/TMSP0181\\_0.pdf](https://spo.nmfs.noaa.gov/sites/default/files/TMSP0181_0.pdf) <https://www.fisheries.noaa.gov/resource/document/habitat-assessment-improvement-plan-2010>.

<sup>8</sup> See <https://www.fisheries.noaa.gov/national/laws-and-policies/catch-shares>.

<sup>9</sup> See Section 303A of the Magnuson-Stevens Act for more information on LAPP requirements.

**Table 2. Existing Catch Share Programs in Federal Fisheries<sup>10,11</sup>**

| Region                            | Program   | Year Implemented |
|-----------------------------------|---|------------------|
| North Pacific                     | Western Alaska Community Development Quota (CDQ) Program  | 1992             |
|                                   | Alaska Halibut and Sablefish IFQ Program  | 1995             |
|                                   | American Fisheries Act (AFA) Pollock Cooperatives   | 1998             |
|                                   | Bering Sea and Aleutian Islands (BSAI) King and Tanner Crab Rationalization                                       | 2005             |
|                                   | Aleutian Islands Pollock Fishery  | 2005             |
|                                   | Bering Sea and Aleutian Islands (BSAI) Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) | 2008             |
|                                   | Central Gulf of Alaska (GOA) Rockfish Program (pilot implemented in 2007)   | 2011             |
| Pacific                           | Pacific Coast Sablefish Permit Stacking Program   | 2001             |
|                                   | Pacific Groundfish Trawl Rationalization Program (whiting and non-whiting trawl)                                  | 2011             |
| Northeast                         | Northeast Multispecies Sectors: Georges Bank Cod - Hook Gear (2004) and Georges Bank Cod - Fixed Gear (2007)      | 2010             |
|                                   | Northeast General Category Sea Scallop IFQ Program  | 2010             |
| Mid-Atlantic                      | Mid-Atlantic Surfclam and Ocean Quahog IFQ Program  | 1990             |
|                                   | Mid-Atlantic Golden Tilefish IFQ Program  | 2009             |
| Atlantic Highly Migratory Species | Atlantic Bluefin Tuna Individual Bluefin Quota Program  | 2015             |
| South Atlantic                    | South Atlantic Wreckfish ITQ Program  | 1992             |
| Gulf of Mexico                    | Red Snapper IFQ Program   | 2007             |
|                                   | Grouper and Tilefish IFQ Program  | 2010             |

In 2010, NOAA Fisheries initiated an effort to track catch share program performance.<sup>12</sup> Findings from the initial report show that existing catch share programs have ended the race to fish (in their respective fisheries), resulting in longer fishing seasons, safer working conditions, and improved management performance. The report also shows that existing catch share programs have resulted in reduced fishing capacity to better match stock size—a management objective in the majority of catch share programs evaluated. Economic performance for the vessels remaining in the program improved, as measured by such metrics as revenue per vessel and average price.

Updated information on selected performance indicators is provided in Table 3. Briefly, results show that inflation-adjusted 2017 revenue from catch share species increased in 7 of the 16 programs and/or sub-components of the programs relative to their respective baseline periods (note that two programs did not have baseline revenues). In addition, the number of active vessels decreased in all but one program (Central Gulf of Alaska (GOA) Rockfish program), while inflation-adjusted revenue per active vessel increased in all programs since their implementation. Further, results show that no program exceeded the annual catch limit (ACL) in 2017.

<sup>10</sup> From 1996 to 2002, there was a congressional moratorium on the establishment of new IFQ programs. There are no catch share programs in the Caribbean.

<sup>11</sup> In 2007, Congress reauthorized the Magnuson-Stevens Act, Section 303A with provisions for limited access privilege programs.

<sup>12</sup> See <https://www.fisheries.noaa.gov/national/laws-and-policies/catch-shares>



**Table 3. Economic Performance Indicators for U.S. Federal Catch Share Programs (2018 dollars)<sup>13</sup>**

| Region                            | Program   | ACL Exceeded |      | Number of Active Vessels |      | Total Revenue from Catch Share Species |             | Revenue per Active Vessel |           |
|-----------------------------------|---|--------------|------|--------------------------|------|--|-------------|---------------------------|-----------|
|                                   |   | Base-line    | 2017 | Base-line                | 2017 | Baseline                               | 2017        | Baseline                  | 2017      |
| North Pacific                     | Alaska Halibut IFQ Program  | Y            | N    | 3432                     | 836  | 99,441,120                             | 103,095,647 | 28,975                    | 123,320   |
|                                   | Alaska Sablefish IFQ Program  | Y            | N    | 1139                     | 293  | 99,861,274                             | 99,100,168  | 382,323                   | 1,084,194 |
|                                   | American Fisheries Act (AFA) Pollock Cooperatives   | Y            | N    | 147                      | 100  | 268,918,277                            | 355,237,695 | 1,829,376                 | 3,552,377 |
|                                   | Bering Sea and Aleutian Islands (BSAI) King and Tanner Crab Ratio-nalization                                      | Y            | N    | 264                      | 70   | 189,480,402                            | 164,441,082 | 2,349,158                 | 2,349,158 |
|                                   | Bering Sea and Aleutian Islands (BSAI) Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) | N            | N    | 22                       | 19   | 98,398,607                             | 118,827,106 | 4,472,664                 | 6,254,058 |
|                                   | Central Gulf of Alaska (GOA) Rockfish Program   | Y            | N    | 42                       | 55   | 7,124,178                              | 9,772,784   | 169,623                   | 177,687   |
| Pacific                           | Pacific Coast Sablefish Permit Stacking Program   | -            | N    | 135                      | 85   |  | 11,011,557  |                           | 129,548   |
|                                   | Pacific Groundfish Trawl Rationalization Program (Whiting and Non-Whiting trawl)                                  | -            | N    | 124                      | 98   |  | 64,553,492  |                           | 658,709   |
| New England                       | Northeast Multispecies Sectors: Georges Bank Cod - Hook Gear (2004) and Georges Bank Cod - Fixed Gear (2007)      | Y            | N    | 417                      | 188  | 93,737,137                             | 46,270,221  | 224,789                   | 246,118   |
|                                   | Northeast/Atlantic General Category Sea Scallop IFQ Program   | -            | -    | 271                      | 146  | 30,853,462                             | 29,629,034  | 113,850                   | 202,939   |
| Mid-Atlantic                      | Mid-Atlantic Ocean Quahog ITQ Program   | N            | N    | 67                       | 22   | 31,891,805                             | 29,446,172  | 475,997                   | 1,338,462 |
|                                   | Mid-Atlantic Surfclam ITQ Program   | N            | N    | 137                      | 40   | 42,973,537                             | 30,097,799  | 313,675                   | 752,445   |
|                                   | Mid-Atlantic Golden Tilefish IFQ Program  | -            | N    | 14                       | 10   | 5,120,526                              | 4,571,837   | 365,752                   | 457,184   |
| Atlantic Highly Migratory Species | Atlantic Bluefin Tuna Individual Bluefin Quota Program  | -            | -    | 116                      |      | 1,058,904                              | 834,663     | 9,128                     | 9,485     |
| Gulf of Mexico                    | Red Snapper IFQ Program   | Y            | N    | 482                      | 449  | 15,175,473                             | 30,216,264  | 31,484                    | 67,297    |
|                                   | Grouper and Tilefish IFQ Program  | Y            | N    | 630                      | 453  | 24,768,272                             | 23,719,084  | 39,315                    | 52,360    |

<sup>13</sup> The South Atlantic Wreckfish ITQ program and Aleutian Island Pollock Fishery are not included due to confidentiality restrictions. The Western Alaska CDQ program was excluded because CDQs are fundamentally different from the other programs. In addition, note that some programs did not have a catch quota prior to the catch share program. For these programs, "-/-" indicates that the question of whether the ACL was exceeded is not applicable. All values have been adjusted by the GDP deflator for 2018. BSAI Crab data for 2017/2018.

## Other Market-Based Management Tools

Vessel or permit buyback programs are another market-based tool used by fishery managers. Under these programs, the government purchases fishing vessels or permits. Doing so permanently decreases the number of participants in the fishery and eases fishing-related pressure on marine resources. Recent buyback programs include BSAI Crab, Pacific Coast Groundfish, Longline Catcher Processor Non-Pollock Groundfish, Southeast Alaska Purse Seine Salmon, and American Fisheries Act Pollock.

Limited Access Privilege Programs, also known as limited entry programs, are another management tool available to fishery managers. In these programs, the number of fishing vessels allowed to harvest a specific fish stock or stock complex is limited to fishermen or vessels with permission to fish. LAPPs have been implemented in almost all federally managed commercial fisheries and in every region except the Caribbean.

Ecolabels are market-based tools offered by third-party entities. An ecolabeling program entitles a fishery product to bear a distinctive logo or statement that certifies the fishery resource was harvested in compliance with specified conservation and sustainability standards. It allows the buyer to potentially influence the sustainable harvest of fishery resources through the purchase of such ecolabeled seafood products at a price premium. The Marine Stewardship Council (MSC) has one of the most recognizable ecolabeling programs in the world. Currently, nearly 300 fisheries worldwide meet MSC sustainability standards, 22 of which are U.S. fisheries (see Table 4). Fisheries obtaining MSC certification for the first time in 2018 include the Gulf of Maine and Georges Bank haddock, pollock, and redfish trawl fishery and the Northeast squid bottom trawl fishery.

**Table 4. U.S. Fisheries with MSC Certification<sup>14</sup>**

| Region        | Fishery   | Certified |
|---------------|---|-----------|
| North Pacific | Alaska salmon   | 2000      |
|               | Alaska pollock – Bering Sea and Aleutian Islands  | 2005      |
|               | Alaska pollock – Gulf of Alaska   | 2005      |
|               | Alaska North Pacific halibut  | 2006      |
|               | Alaska North Pacific sablefish  | 2006      |
|               | Alaska flatfish – Bering Sea and Aleutian Islands   | 2010      |
|               | Alaska flatfish – Gulf of Alaska  | 2010      |
|               | Alaska Pacific cod – Bering Sea and Aleutian Islands  | 2010      |
|               | Alaska Pacific cod – Gulf of Alaska   | 2010      |
|               | Annette Islands Reserve salmon  | 2011      |
| Pacific       | Oregon and Washington pink shrimp   | 2007      |
|               | Pacific hake mid-water trawl  | 2010      |
|               | U.S. West Coast limited entry groundfish trawl  | 2014      |
|               | American Albacore Fishing Association and the Western Fishboat Owners Association North Pacific albacore tuna | 2018      |
|               | Atlantic spiny dogfish, winter skate and little skate   | 2012      |
| North-east    | Atlantic sea scallop  | 2013      |
|               | North Atlantic swordfish, yellowfin, and albacore tuna  | 2013      |
|               | Acadian redfish, pollock and haddock otter trawl  | 2016      |
|               | Atlantic surfclam and ocean quahog  | 2016      |
|               | Gulf of Maine lobster fishery   | 2016      |
|               | Gulf of Maine and Georges Bank haddock, pollock, and redfish trawl  | 2018      |
|               | Northeast squid bottom trawl fishery  | 2018      |

## COMMERCIAL FISHERIES – NATIONAL OVERVIEW

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

### Key U.S. Commercial Species

- Alaska pollock
- American lobster
- Blue crab
- Menhaden
- Pacific halibut
- Pacific salmon
- Sablefish
- Sea scallop
- Shrimp
- Tunas

<sup>14</sup> Marine Stewardship Council Certifications as of September 29, 2021. For more information about these fisheries and the Marine Stewardship Council certification process, see <https://www.msc.org/>. Note that the Northeast Region's Gulf of Maine lobster fishery certification was suspended in 2020.

## Regional Highlights

At the national level, this report includes landings revenue, landings, and prices for 10 key species or species groups, which were selected so that each region has at least one species in the top 10. Results show that commercial fishermen in Alaska caught the most salmon (556.8 million pounds) and earned \$553.5 million for their catch in 2018. Tunas were caught in large numbers in Hawai'i (23.9 million pounds) and generated \$94.2 million in landings revenue. Maine fishermen contributed the most to American lobster landings (121.2 million pounds) and earned \$491.6 million for their catch in 2018. In Massachusetts, sea scallopers harvested 40.4 million pounds of scallop and earned \$373.8 million for their catch. More blue crabs were caught in Louisiana (42.7 million pounds) than in any other state, earning more than \$60.7 million. Louisiana accounted for the greatest quantity of menhaden landed in 2018, with fishermen landing 855.2 million pounds worth \$90.3 million in dockside revenue. Sea scallop garnered the highest average ex-vessel price per pound (\$9.41) among the key species and species groups in 2018, with state-specific prices ranging from \$8.38 in Maryland to \$13.19 in New Hampshire.

## Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>15</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs

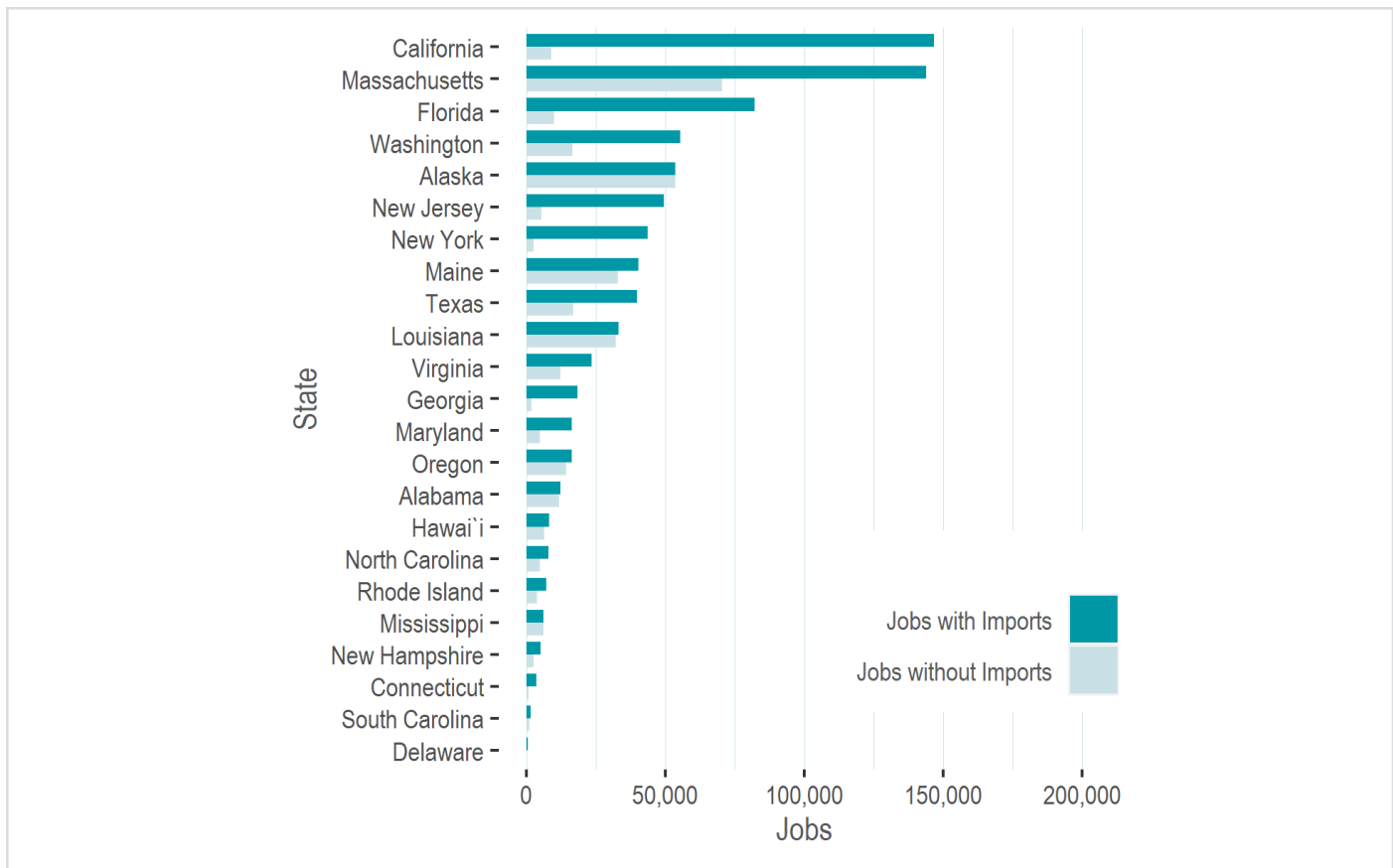
to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>16</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry supported 1.2 million full- and part-time jobs and generated \$165.1 billion in sales, \$42.9 billion in income, and \$67.1 billion in value-added impacts nationwide (Table 5). The importers sector generated the largest sales impacts (\$84.1 billion) and value-added impacts (\$25.6 billion). The retail sector generated the largest employment impacts (627,357 jobs) and income impacts (\$15.5 billion).

<sup>15</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

<sup>16</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]



**Graph 1. Jobs supported by the U.S. Seafood Industry (Jobs with and without Imports), 2018**

**Table 5. U.S. Seafood Industry Economic Impacts Trends (jobs, millions of dollars)**

|               | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Jobs          | 1,270,141 | 1,350,627 | 1,394,833 | 1,179,848 | 1,190,092 | 1,246,366 | 1,225,826 |
| Sales         | \$140,661 | \$142,249 | \$153,341 | \$144,194 | \$144,293 | \$170,314 | \$165,063 |
| Income        | \$38,722  | \$39,747  | \$41,956  | \$39,744  | \$39,905  | \$44,595  | \$42,899  |
| Value Added   | \$59,017  | \$60,309  | \$64,071  | \$60,566  | \$60,768  | \$69,177  | \$67,058  |
| Total Revenue | \$5,099   | \$5,547   | \$5,473   | \$5,184   | \$5,337   | \$5,409   | \$5,413   |



**Table 6. Sales, Income and Value-Added Impacts Generated by the U.S. Seafood Industry, 2018 (thousands of dollars)**

| State          | Sales         | Income       | Value Added  |
|----------------|---------------|--------------|--------------|
| U.S. Total     | \$165,063,417 | \$42,899,203 | \$67,058,135 |
| California     | \$29,081,406  | \$6,135,840  | \$10,259,928 |
| Florida        | \$19,200,443  | \$3,591,245  | \$6,422,185  |
| Massachusetts  | \$16,047,420  | \$3,940,967  | \$6,131,820  |
| New Jersey     | \$10,266,150  | \$2,109,011  | \$3,555,401  |
| Washington     | \$8,333,266   | \$2,153,320  | \$3,317,018  |
| New York       | \$6,708,367   | \$1,388,413  | \$2,329,948  |
| Texas          | \$5,393,461   | \$1,317,551  | \$2,083,863  |
| Alaska         | \$4,386,922   | \$1,945,289  | \$2,412,608  |
| Maine          | \$3,268,748   | \$952,033    | \$1,426,818  |
| Virginia       | \$3,239,457   | \$799,762    | \$1,248,196  |
| Georgia        | \$3,049,051   | \$668,751    | \$1,105,417  |
| Maryland       | \$2,518,497   | \$581,825    | \$927,821    |
| Louisiana      | \$2,039,601   | \$750,091    | \$1,020,285  |
| Oregon         | \$1,335,925   | \$456,662    | \$644,824    |
| Rhode Island   | \$951,999     | \$232,939    | \$367,585    |
| North Carolina | \$862,164     | \$232,277    | \$351,716    |
| Hawai'i        | \$776,205     | \$233,373    | \$343,554    |
| Connecticut    | \$720,408     | \$147,447    | \$248,453    |
| New Hampshire  | \$655,022     | \$165,382    | \$256,404    |
| Alabama        | \$610,479     | \$236,815    | \$312,035    |
| Mississippi    | \$316,859     | \$124,857    | \$161,775    |
| South Carolina | \$174,821     | \$49,626     | \$73,865     |
| Delaware       | \$83,705      | \$16,436     | \$27,626     |

## Landings Revenue

Landings revenue in the United States totaled \$5.4 billion in 2018 (Table 7). This represented a 43% increase in nominal value from 2009 levels (a 23% increase in real terms after adjusting for inflation) and, year-over-year, a 3% decrease from 2017 (Graph 2). Finfish landings revenue accounted for 45% of all landings revenue. American lobster had the highest landings revenue in 2018.

**Table 7. Commercial Fisheries Landings Revenue by Region, 2018 (thousands of dollars)**

| Region                    | Revenue     |
|---------------------------|-------------|
| U.S. Total                | \$5,413,339 |
| North Pacific             | \$1,781,999 |
| New England               | \$1,359,891 |
| Gulf of Mexico            | \$890,279   |
| Pacific                   | \$635,622   |
| Mid-Atlantic              | \$451,212   |
| South Atlantic            | \$175,178   |
| Western Pacific (Hawai'i) | \$119,158   |

From 2009 to 2018, American lobster (105%, 76% in real terms), Alaska pollock (77%, 53% in real terms), and menhaden (62%, 40% in real terms) had the largest increases, while Pacific halibut (-36%, -45% in real terms) and sablefish (-9%, -22% in real terms) had the largest decreases. From 2017 to 2018, menhaden (41%), Ameri-

can lobster (11%), and sea scallops (4%) had the largest increases, while Pacific halibut (-28%), sablefish (-25%), and Pacific salmon (-24%) had the largest decreases.

### Commercial Revenue: Largest Increases

*From 2009:*

- American lobster (105%, 76% in real terms)
- Alaska pollock (77%, 53% in real terms)
- Menhaden (62%, 40% in real terms)

*From 2017:*

- Menhaden (41%)
- American lobster (11%)
- Sea Scallops (4%)

### Commercial Revenue: Largest Decreases

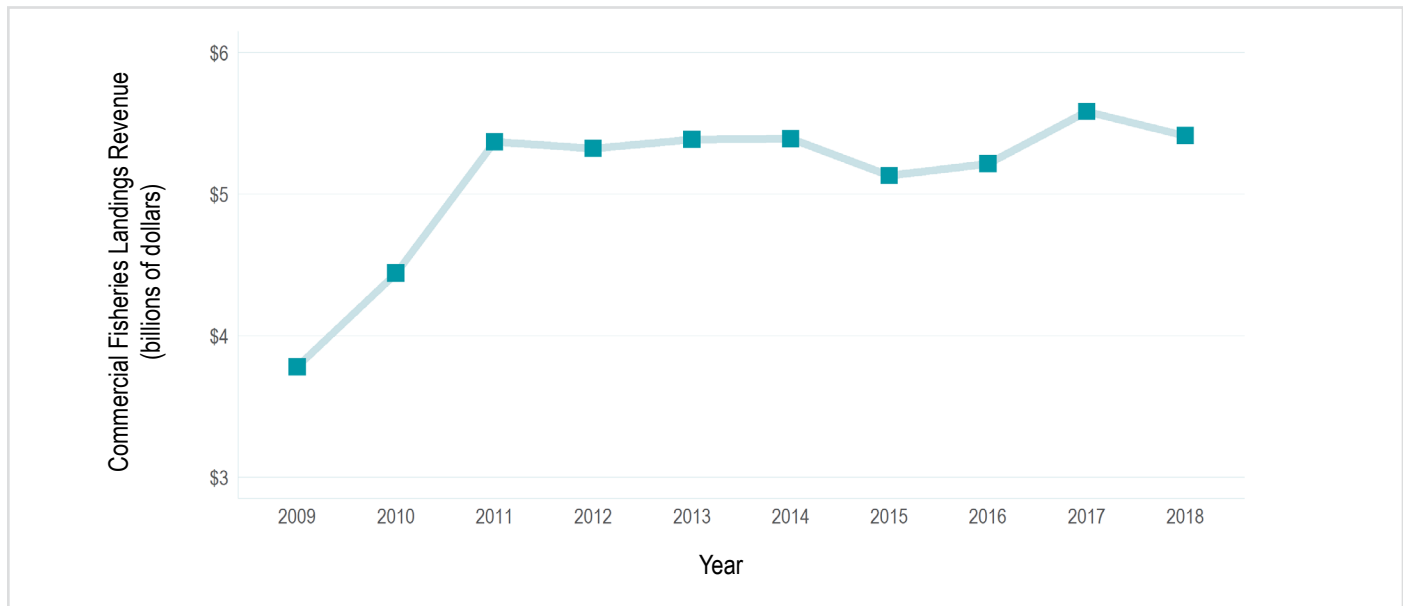
*From 2009:*

- Pacific halibut (-36%, -45% in real terms)
- Sablefish (-9%, -22% in real terms)

*From 2017:*

- Pacific halibut (-28%)
- Sablefish (-25%)
- Pacific salmon (-24%)

Alaska earned the greatest share of landings revenue in 2018 (\$1.8 billion), contributing 33% of the national total (Table 7). Massachusetts (\$548 million, or 19% of U.S. shellfish revenue) and Maine (\$528.6 million, or 18% of U.S. shellfish revenue) earned the most ex-vessel revenue from shellfish landings.



**Graph 2. U.S. Commercial Fisheries Landings Revenue, 2009-2018 (nominal values, billions of dollars)**

## Landings

Landings volume in the United States totaled 9.2 billion pounds in 2018 (Table 8). This represented a 16% increase from 2009 levels and, year-over-year, a 6% decrease from 2017 (Graph 3). Finfish landings revenue accounted for 88% of all landed weight. Alaska pollock had the highest landings volume in 2018.

From 2009 to 2018, Alaska pollock (80%), American lobster (48%), and other (24%) had the largest increases, while Pacific halibut (-63%), blue crab (-21%), and Pacific salmon (-18%) had the largest decreases. From 2017 to 2018, other (68%), menhaden (12%), and sea scallop (12%) had the largest increases, while Pacific salmon (-43%), Pacific halibut (-16%), and blue crab (-5%) had the largest decreases.

### Commercial Landings: Largest Increases

*From 2009:*

- Alaska pollock (80%)
- American lobster (48%)
- Tunas (6%)

*From 2017:*

- Menhaden (12%)
- Sea scallop (12%)
- American lobster (8%)

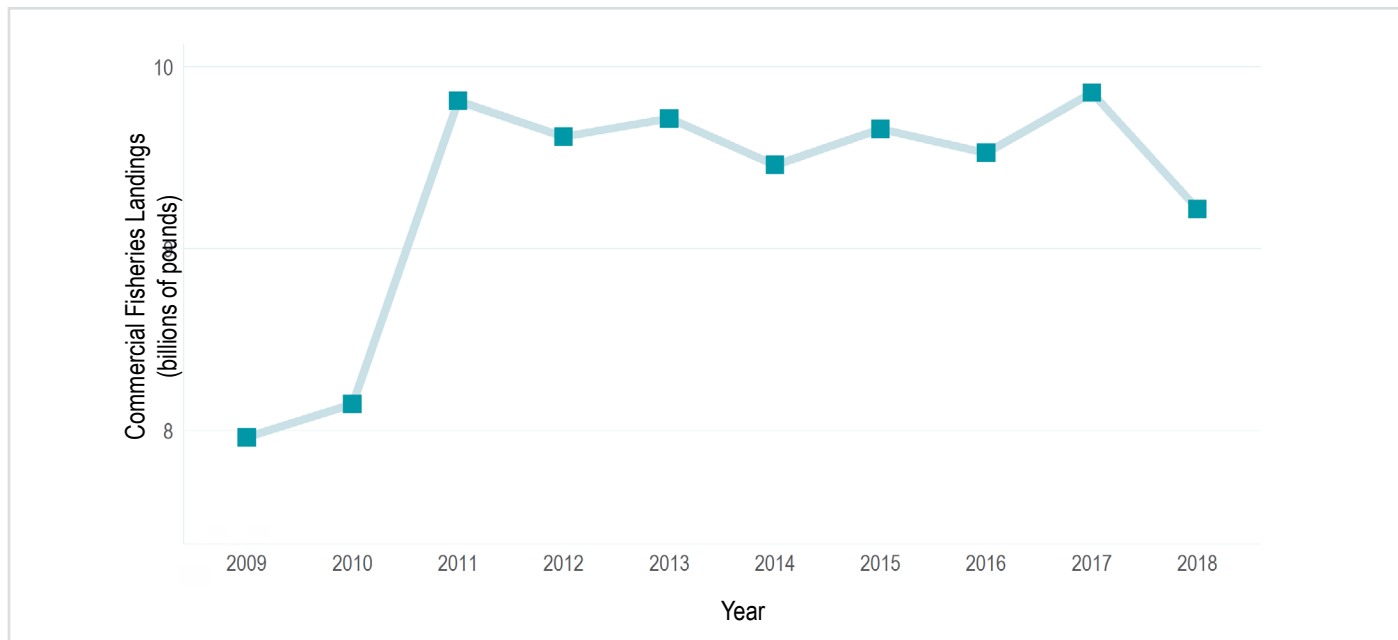
### Commercial Landings: Largest Decreases

*From 2009:*

- Pacific halibut (-63%)
- Blue crab (-21%)
- Pacific salmon (-18%)

*From 2017:*

- Pacific salmon (-43%)
- Pacific halibut (-16%)
- Blue crab (-5%)



**Graph 3. U.S. Commercial Fisheries Landings, 2009-2018 (billions of pounds)**

The North Pacific Region (Alaska) accounted for 59% of U.S. landings in 2018, followed by the Gulf of Mexico Region (17%) and the Pacific Region (11%) (Table 8).

**Table 8. Commercial Fisheries Landings by Region, 2018 (thousands of pounds)**

| Region                    | Landings Volume |
|---------------------------|-----------------|
| U.S. Total                | 9,217,859       |
| North Pacific             | 5,403,754       |
| Gulf of Mexico            | 1,542,885       |
| Pacific                   | 976,724         |
| Mid-Atlantic              | 602,051         |
| New England               | 551,997         |
| South Atlantic            | 104,952         |
| Western Pacific (Hawai'i) | 35,497          |

## Prices

Of all key species or species groups, sea scallop (\$9.20 per pound) had the highest national ex-vessel price. Menhaden (\$0.10 per pound) had the lowest ex-vessel price of all key species nationally.

From 2009 to 2018, Pacific salmon (77%, 53% in real terms), Pacific halibut (74%, 49% in real terms), and menhaden (61%, 39% in real terms) had the largest increases, while Alaska pollock (-1%, -15% in real terms) had the largest decreases. From 2017 to 2018, Pacific salmon (33%), menhaden (26%), and blue crab (5%) had the largest increases, while sablefish (-27%), Pacific halibut (-14%), and shrimp (-9%) had the largest decreases.

## RECREATIONAL FISHERIES — NATIONAL OVERVIEW

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. The key species/species groups included in this report were chosen because they are caught in large numbers, highly prized by recreational anglers, associated with federal fishery management plans; or a combination of one or more of these factors. The recreational fisheries section reports on angler participation, trips, economic impacts and expenditures, and catch of key species/species groups.<sup>17,18</sup>

<sup>17</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018.

<sup>18</sup> See data sources section for more information about where each region or state's data comes from.



**Key U.S. Recreational Species**<sup>19</sup>

- Dolphinfish (Western Pacific and Atlantic)
- Drum (Atlantic croaker and spot) (Atlantic regions)
- Drum (seatrouts) (Atlantic regions): sand seatrout, seatrout genus, silver seatrout, spotted seatrout, and weakfish
- Pacific halibut (North Pacific)
- Pacific salmon (Pacific and North Pacific): Chinook salmon, chum salmon, coho salmon, sockeye salmon, and pink salmon
- Rockfishes and scorpionfishes (Pacific and North Pacific): bank rockfish, black and yellow rockfish, black rockfish, blue rockfish, bocaccio, bronzespotted rockfish, brown rockfish, calico rockfish, California scorpionfish, canary rockfish, chilipepper, china rockfish, copper rockfish, cowcod, darkblotched rockfish, deacon rockfish, deacon/blue rockfish unknown, flag rockfish, freckled rockfish, gopher rockfish, grass rockfish, greenblotched rockfish, greenspotted rockfish, greenstriped rockfish, halfbanded rockfish, honeycomb rockfish, kelp rockfish, mexican rockfish, olive rockfish, Pacific ocean perch, pinkrose rockfish, quillback rockfish, redbanded rockfish, redstripe rockfish, rockfish genus, rockfish species, rosethorn rockfish, rosy rockfish, scorpionfish family, shortspine thornyhead, silvergray rockfish, speckled rockfish, squarespot rockfish, starry rockfish, stripetail rockfish, swordspine rockfish, tiger rockfish, treefish, vermilion rockfish, widow rockfish, yelloweye rockfish, yellowmouth rockfish, and yellowtail rockfish
- Striped bass (Atlantic regions)
- Summer flounder (Atlantic regions)
- Tunas (Atlantic regions): albacore, bigeye tuna, blackfin tuna, bluefin tuna, tuna genus, and yellowfin tuna
- Tunas (Pacific and Western Pacific regions): albacore, bigeye tuna, bluefin tuna, and yellowfin tuna

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and

total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

**Regional Highlights**

At the national level, the report includes fishing trips, participation, and the harvest and release numbers of 10 key species or species groups, which were selected so that each region has at least one species in the top 10. Results show that in 2018, recreational anglers in East Florida took the most trips (44 million trips) and West Florida spent the most on trips (\$2 billion). East Florida spent the second most on trips (\$1.4 billion). West Florida also had the most recreational anglers participate in fishing in their state, with 3.2 million anglers.

Virginia caught the most Atlantic croaker and spot (21.2 million fish), West Florida caught the most seatrouts (28 million fish), Maryland caught the most striped bass (8.5 million fish), and New Jersey caught the most summer flounder (11.4 million fish). Alaska caught the most Pacific halibut (536,312 fish) and Pacific salmon (718,106 fish).

**Economic Impacts and Expenditures**

The economic contributions or impacts of recreational fishing activities in the United States is based on spending by recreational anglers.<sup>20</sup> Total annual trip expenditures were estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures were estimated by multiplying mean durable expenditures by the estimated annual number of adult participants in the United States and adjusting by the CPI (consumer price index) to the current year.<sup>21</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. It includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler.

<sup>19</sup> Atlantic Regions refer to those states within New England, Mid-Atlantic, South Atlantic, and the Gulf of Mexico.

<sup>20</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>21</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

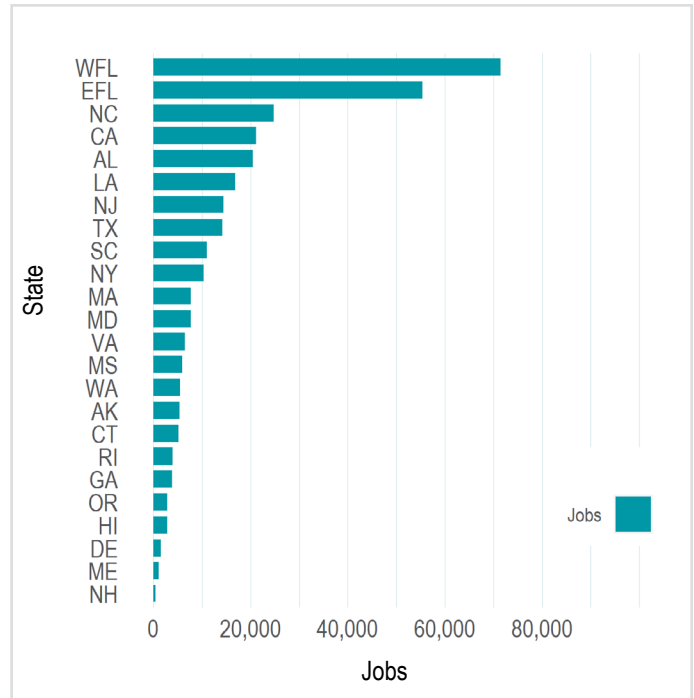
Economic impacts from recreational fishing activities supported 469,848 jobs across the United States in 2018 (Table 9). Recreational fishing also generated about \$72.5 billion in sales impacts, \$24.3 billion in income impacts, and \$40.7 billion in value-added impacts.

Impacts from durable equipment expenditures (e.g., rods and reels, fishing-related equipment, boats, vehicles, and second homes) accounted for 67% of total job impacts, 68% of sales impacts, 69% of income impacts, and 67% of value added impacts. Of the three fishing trip modes, shore-boat-based fishing trips had the greatest economic impact, accounting for 16% of employment, 15% of sales, 15% of income impacts, and 16% of value-added impacts.

**Table 9. Recreational Economic Impacts Trends for the United States (millions of dollars)<sup>22</sup>**

|             | 2016     | 2017     | 2018     |
|-------------|----------|----------|----------|
| #Jobs       | 486,164  | 487,024  | 469,848  |
| Sales       | \$72,757 | \$73,752 | \$72,462 |
| Income      | \$24,377 | \$24,684 | \$24,268 |
| Value Added | \$40,885 | \$41,474 | \$40,733 |

The greatest employment impacts from saltwater recreational fishing were generated in West Florida, followed by East Florida and North Carolina (Graph 4). The highest sales impacts were generated in West Florida, followed by East Florida and California (Table 10).



**Graph 4. Jobs supported by the U.S. Recreational Fishing Industry, 2018**

<sup>22</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018.

**Table 10. Sales, Income, and Value-Added Impacts Generated by the Recreational Fishing Industry, 2018 (\$ millions)**

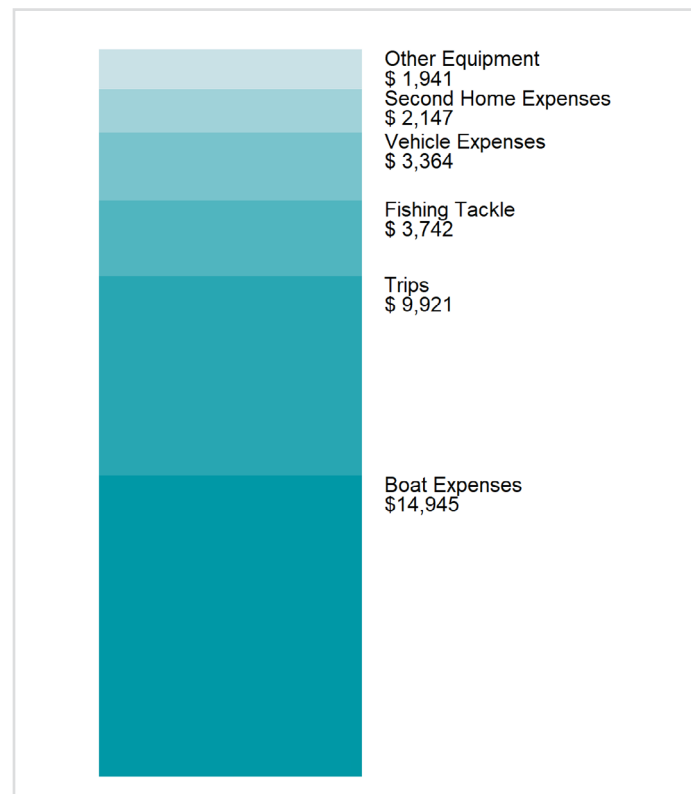
| State          | Jobs    | Sales    | Income   | Value Added |
|----------------|---------|----------|----------|-------------|
| U.S. Total     | 469,848 | \$72,462 | \$24,268 | \$40,733    |
| West Florida   | 71,419  | \$8,347  | \$2,981  | \$5,063     |
| East Florida   | 55,407  | \$6,476  | \$2,324  | \$3,967     |
| North Carolina | 24,795  | \$2,615  | \$947    | \$1,583     |
| California     | 21,145  | \$2,781  | \$961    | \$1,543     |
| Alabama        | 20,465  | \$1,947  | \$714    | \$1,274     |
| Louisiana      | 16,819  | \$1,929  | \$635    | \$1,154     |
| New Jersey     | 14,395  | \$1,900  | \$815    | \$1,272     |
| Texas          | 14,226  | \$1,830  | \$681    | \$1,147     |
| South Carolina | 11,010  | \$1,042  | \$359    | \$643       |
| New York       | 10,360  | \$1,124  | \$479    | \$817       |
| Massachusetts  | 7,711   | \$931    | \$432    | \$637       |
| Maryland       | 7,692   | \$839    | \$335    | \$556       |
| Virginia       | 6,504   | \$712    | \$275    | \$465       |
| Mississippi    | 5,955   | \$602    | \$204    | \$375       |
| Washington     | 5,450   | \$692    | \$268    | \$444       |
| Alaska         | 5,360   | \$558    | \$195    | \$326       |
| Connecticut    | 5,118   | \$606    | \$263    | \$423       |
| Rhode Island   | 3,963   | \$419    | \$179    | \$277       |
| Georgia        | 3,811   | \$344    | \$122    | \$220       |
| Oregon         | 2,903   | \$306    | \$134    | \$202       |
| Hawai'i        | 2,900   | \$394    | \$122    | \$218       |
| Delaware       | 1,534   | \$173    | \$63     | \$115       |
| Maine          | 1,141   | \$117    | \$44     | \$71        |
| New Hampshire  | 474     | \$49     | \$21     | \$33        |

In 2018, expenditures for fishing trips and durable goods equipment in the United States totaled \$36.1 billion.

Approximately \$9.9 billion of these expenditures were related to trip expenses. Total trip expenditures were composed of expenses on trips in the shore (47.5%), private boat (39.3%), and for-hire (13.2%) sectors. Durable goods expenditures totaled \$26.1 billion in 2018, with the largest portion coming from Boat Expenses (\$14.9 billion) (Graph 5).

## Participation

Nationwide, 8.3 million recreational saltwater anglers fished in their home states in 2018. This number represented a 25% decrease from 2009 and a 9% decrease from 2017. Coastal county residents made up 86% of this total while non-coastal county residents made up 14%. West Florida had the highest participation of anglers (3.2 million), followed by East Florida and North Carolina.

**Graph 5. Recreational Fishing Trip and Durable Goods Expenditures, 2018 (\$ billions)**



## Fishing Trips

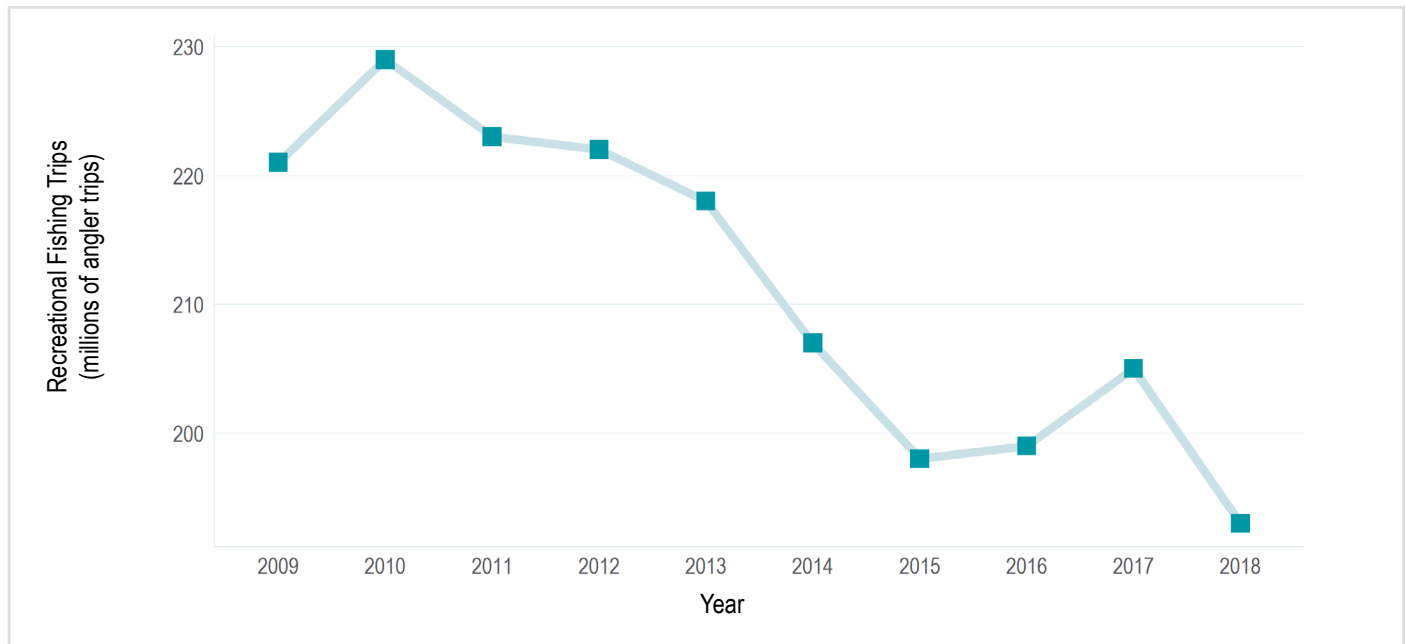
Nationwide, anglers took approximately 193.4 million saltwater fishing trips around the country (Table 11). This number represented a 12% decrease from 2009 and a 6% decrease from 2017 (Graph 6). Approximately 62% of fishing trips were taken via shore. East Florida anglers took the most fishing trips (44 million trips), followed by those in West Florida and North Carolina (Table 12).

**Table 11. Recreational Fishing Trips by Region, 2018 (thousands of fishing trips)**

| Region                      | Trips   |
|-----------------------------|---------|
| U.S. Total                  | 193,357 |
| South Atlantic              | 75,101  |
| Gulf of Mexico              | 55,755  |
| Mid-Atlantic                | 39,030  |
| New England                 | 15,104  |
| Pacific                     | 4,173   |
| Western Pacific (Hawai'i)   | 3,421   |
| North Pacific <sup>23</sup> | 774     |

**Table 12. Recreational Fishing Trips by State, 2018 (thousands of trips)**

| State          | Trips  |
|----------------|--------|
| East Florida   | 43,987 |
| West Florida   | 40,996 |
| North Carolina | 16,624 |
| New Jersey     | 12,493 |
| New York       | 11,242 |
| South Carolina | 9,897  |
| Maryland       | 6,762  |
| Massachusetts  | 6,705  |
| Alabama        | 6,681  |
| Virginia       | 6,386  |
| Georgia        | 4,593  |
| Mississippi    | 4,555  |
| Connecticut    | 3,543  |
| Hawai'i        | 3,421  |
| California     | 3,405  |
| Rhode Island   | 2,553  |
| Louisiana      | 2,276  |
| Delaware       | 2,147  |
| Maine          | 1,626  |
| Texas          | 1,247  |
| Alaska         | 774    |
| New Hampshire  | 676    |
| Washington     | 558    |
| Oregon         | 210    |



**Graph 6. Recreational Fishing Trips, 2009-2018 (millions of angler trips)**

## Harvest and Release Trends

In 2018, drum (seatrouts) (Atlantic regions) (70.8 million fish), drum (Atlantic croaker and spot) (Atlantic regions) (62.2 million fish), and striped bass (Atlantic regions) (35.7 million fish), were most frequently caught by recreational fishermen in the United States. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

<sup>23</sup> Alaska effort is measured in 'Days Fished,' not in 'Angler Trips.' Numbers before 2011 use estimates of the portion of days fished devoted to shellfish, which were excluded.

From 2009 to 2018, rockfishes and scorpionfishes (Pacific and North Pacific) (64%), tunas (Pacific and Western Pacific regions) (52%), and dolphinfish (Western Pacific and Atlantic) (46%) had the largest increases, while summer flounder (Atlantic regions) (-54%), Pacific salmon (Pacific and North Pacific) (-50%), and drum (Atlantic croaker and spot) (Atlantic regions) (-36%) had the largest decreases. From 2017 to 2018, dolphinfish (Western Pacific and Atlantic) (20%) and tunas (Atlantic regions) (14%) had the largest increases, while Pacific salmon (Pacific and North Pacific) (-29%), drum (Atlantic croaker and spot) (Atlantic regions) (-24%), and striped bass (Atlantic regions) (-20%) had the largest decreases.

### Harvest and Release: Largest Increases

#### From 2009:

- Rockfishes and scorpionfishes (Pacific and North Pacific) (64%)
- Tunas (Pacific and Western Pacific regions) (52%)
- Dolphinfish (Western Pacific and Atlantic) (46%)

#### From 2017:

- Dolphinfish (Western Pacific and Atlantic) (20%)
- Tunas (Atlantic regions) (14%)

### Harvest and Release: Largest Decreases

#### From 2009:

- Summer flounder (Atlantic regions) (-54%)
- Pacific salmon (Pacific and North Pacific) (-50%)
- Drum (Atlantic croaker and spot) (Atlantic regions) (-36%)

#### From 2017:

- Pacific salmon (Pacific and North Pacific) (-29%)
- Drum (Atlantic croaker and spot) (Atlantic regions) (-24%)
- Striped bass (Atlantic regions) (-20%)

## MARINE ECONOMY — UNITED STATES

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The national marine economy consists of two industry sectors:

1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>24</sup>

The Commercial Fishing Location Quotient (CFLQ) measures the proportional size of this sector in a state's economy relative to the size of the commercial fishing sector in the national economy.<sup>25</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

In 2017, 7.9 million employer establishments operated throughout the United States (including marine and non-marine related establishments). These establishments employed 128.6 million workers and had a total annual payroll of \$6.7 trillion. The nation's gross domestic product was approximately \$19.6 trillion in 2017.<sup>26</sup>

## Seafood Sales and Processing

### Seafood Product Preparation and Packaging: In

2017, there were 2,242 non-employer firms in the seafood product preparation and packaging sector (a 61% increase from 2009). Annual receipts for these firms totaled \$175.7 million. More of these non-employer firms were in Florida (280), California (202), New York (195), and Texas (131) than in any other state. There were 551 employer firms in the seafood product preparation and packaging sector (a 15% decrease from 2009). These establishments employed 31,801 workers (a 3% increase from 2009) and had a total annual payroll of \$1.5 billion. The greatest number of employer and non-employer establishments in this sector was in Alaska (94), followed by Washington (73), and California (39).

**Seafood Sales, Retail:** In 2017, there were 2,428 non-employer firms in seafood retail sales (a 1% decrease from 2009). Annual receipts for these firms totaled \$214.5 million. More of these non-employer firms were in

<sup>24</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>25</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>26</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

Florida (316) and California (230) than in any other state. There were 1,960 employer firms in the seafood retail sector (remains unchanged from 2009). These establishments employed 10,757 workers (a 14% increase from 2009) and had a total annual payroll of \$279.8 million. The greatest number of employer and non-employer establishments in this sector was in New York (385), followed by Florida (176), and California (153).

**Seafood Sales, Wholesale:** Nationally, there were 1,998 employer firms in the seafood wholesale sector (a 5% decrease from 2009). These establishments employed 21,914 workers (a 14% increase from 2009) and had a total annual payroll of \$1 billion. The greatest number of employer and non-employer establishments in this sector was in California (320), followed by New York (259), and Florida (230).

## Transportation Support and Marine Operations

### Coastal and Great Lakes Freight Transportation:

There were 581 employer firms in the coastal and Great Lakes freight transportation sector. These establishments employed 17,799 workers and had a total annual payroll of \$1.6 billion. Louisiana (94), Alaska (90), and New York (70) had the greatest number of these employer establishments.

**Deep Sea Freight Transportation:** There were 276 employer firms in the deep sea freight transportation sector. These establishments employed 6,515 workers and had a total annual payroll of \$654.5 million. Florida (58), California (38), and Texas (32) had the greatest number of these employer establishments.

**Deep Sea Passenger Transportation:** There were 69 employer firms in the deep sea passenger transportation sector. These establishments employed 15,128 workers and had a total annual payroll of \$1.3 billion. Florida (38), California (8), and Washington (4) had the greatest number of these employer establishments.

**Marinas:** There were 3,669 employer firms classified as marinas. These establishments employed 26,825 workers and had a total annual payroll of \$1.1 billion. Florida (450), New York (402), and California (227) had the

greatest number of these employer establishments.

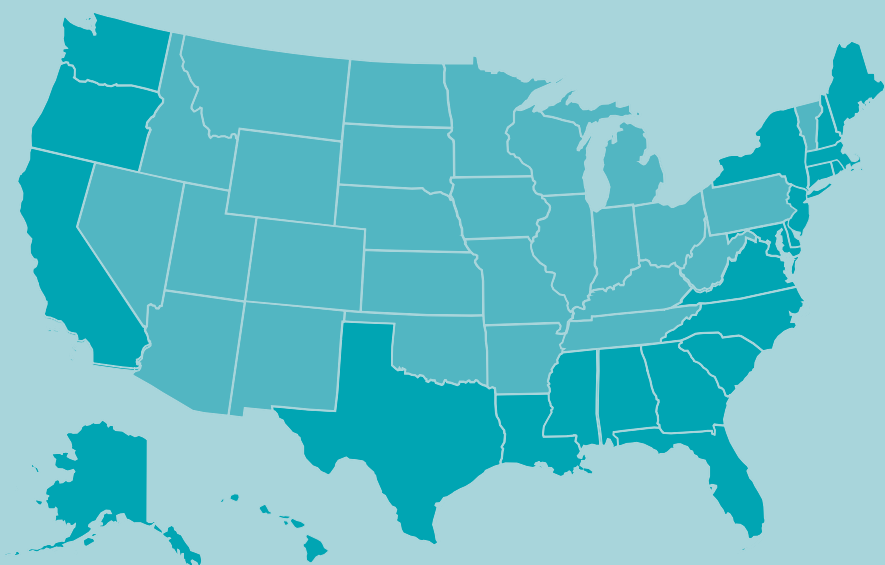
**Marine Cargo Handling:** There were 480 employer firms providing marine cargo handling services. These establishments employed 58,663 workers and had a total annual payroll of \$4.5 billion. Florida (72), California (61), and Texas (56) had the greatest number of these employer establishments.

**Navigational Services to Shipping:** There were 1,032 employer firms providing navigational services to the shipping sector. These establishments employed 13,635 workers and had a total annual payroll of \$1.1 billion. Florida (226), Louisiana (167), and Texas (81) had the greatest number of these employer establishments.

**Port and Harbor Operations:** There were 335 employer firms in the port and harbor operations sector. These establishments employed 9,005 workers and had a total annual payroll of \$503.2 million. Florida (50), Texas (29), and Louisiana (24) had the greatest number of these employer establishments.

**Ship and Boat Building:** There were 1,463 employer firms in the ship and boat building sector. These establishments employed 137,300 workers and had a total annual payroll of \$7.9 billion. Florida (269), Washington (135), and Louisiana (105) had the greatest number of these employer establishments.

# Tables | National Overview





## United States | Commercial Fisheries

## 2018 Economic Impacts of the United States Seafood Industry (jobs, millions of dollars)

|                                      | With Imports |         |        |             | Without Imports |        |        |             |
|--------------------------------------|--------------|---------|--------|-------------|-----------------|--------|--------|-------------|
|                                      | #Jobs        | Sales   | Income | Value Added | #Jobs           | Sales  | Income | Value Added |
| Total Impacts                        | 1,225,826    | 165,063 | 42,899 | 67,058      | 672,438         | 52,457 | 19,201 | 27,242      |
| Commercial Harvesters                | 158,811      | 14,052  | 4,671  | 7,270       | 158,811         | 14,052 | 4,671  | 7,270       |
| Seafood Processors and Dealers       | 99,177       | 15,970  | 5,040  | 7,006       | 51,171          | 8,240  | 2,600  | 3,615       |
| Importers                            | 259,793      | 84,075  | 13,475 | 25,630      | 0               | 0      | 0      | 0           |
| Seafood Wholesalers and Distributors | 80,688       | 12,874  | 4,231  | 6,053       | 23,790          | 3,796  | 1,247  | 1,785       |
| Retail                               | 627,357      | 38,093  | 15,483 | 21,099      | 438,666         | 26,369 | 10,682 | 14,573      |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (millions of dollars)

|                    | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total              | 3,779 | 4,441 | 5,369 | 5,322 | 5,387 | 5,392 | 5,131 | 5,215 | 5,584 | 5,413 |
| Finfish            | 1,801 | 2,153 | 2,627 | 2,595 | 2,572 | 2,380 | 2,351 | 2,230 | 2,676 | 2,459 |
| Shellfish          | 1,952 | 2,254 | 2,702 | 2,684 | 2,771 | 2,971 | 2,744 | 2,945 | 2,869 | 2,912 |
| Other              | 27    | 33    | 41    | 43    | 44    | 41    | 36    | 40    | 39    | 42    |
| <b>Key Species</b> |       |       |       |       |       |       |       |       |       |       |
| Alaska pollock     | 254   | 280   | 402   | 453   | 406   | 400   | 509   | 417   | 457   | 451   |
| American lobster   | 308   | 404   | 423   | 432   | 461   | 567   | 622   | 670   | 567   | 630   |
| Blue crab          | 164   | 205   | 185   | 193   | 186   | 216   | 217   | 211   | 197   | 196   |
| Menhaden           | 99    | 107   | 144   | 128   | 125   | 127   | 180   | 179   | 114   | 161   |
| Pacific halibut    | 136   | 203   | 209   | 148   | 115   | 110   | 115   | 122   | 121   | 87    |
| Pacific salmon     | 414   | 572   | 665   | 581   | 756   | 617   | 502   | 421   | 788   | 599   |
| Sablefish          | 122   | 134   | 185   | 148   | 102   | 111   | 115   | 117   | 147   | 111   |
| Sea scallop        | 373   | 452   | 581   | 559   | 467   | 424   | 440   | 488   | 510   | 532   |
| Shrimp             | 376   | 380   | 527   | 505   | 583   | 692   | 487   | 510   | 544   | 510   |
| Tunas              | 95    | 108   | 136   | 164   | 146   | 134   | 138   | 157   | 153   | 149   |

## Total Landings and Landings of Key Species/Species Groups (millions of pounds)

|                    | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total              | 7,960 | 8,145 | 9,812 | 9,615 | 9,716 | 9,461 | 9,657 | 9,527 | 9,858 | 9,218 |
| Finfish            | 6,723 | 6,851 | 8,435 | 8,293 | 8,433 | 8,197 | 8,572 | 8,436 | 8,757 | 8,119 |
| Shellfish          | 1,207 | 1,258 | 1,333 | 1,279 | 1,222 | 1,209 | 1,051 | 1,065 | 1,079 | 1,061 |
| Other              | 31    | 36    | 44    | 43    | 61    | 55    | 34    | 26    | 23    | 38    |
| <b>Key Species</b> |       |       |       |       |       |       |       |       |       |       |
| Alaska pollock     | 1,869 | 1,948 | 2,811 | 2,872 | 3,003 | 3,146 | 3,263 | 3,355 | 3,389 | 3,364 |
| American lobster   | 100   | 118   | 126   | 151   | 151   | 148   | 147   | 159   | 137   | 148   |
| Blue crab          | 177   | 199   | 203   | 183   | 132   | 140   | 153   | 162   | 148   | 140   |
| Menhaden           | 1,571 | 1,473 | 1,875 | 1,771 | 1,341 | 1,232 | 1,631 | 1,736 | 1,414 | 1,582 |
| Pacific halibut    | 58    | 55    | 42    | 33    | 29    | 22    | 24    | 24    | 26    | 21    |
| Pacific salmon     | 706   | 789   | 780   | 637   | 1,070 | 720   | 1,067 | 561   | 1,009 | 577   |
| Sablefish          | 45    | 42    | 43    | 43    | 39    | 35    | 35    | 34    | 38    | 39    |
| Sea scallop        | 58    | 57    | 59    | 57    | 41    | 34    | 36    | 41    | 52    | 58    |
| Shrimp             | 307   | 245   | 319   | 313   | 291   | 327   | 333   | 292   | 299   | 308   |
| Tunas              | 49    | 48    | 50    | 60    | 56    | 58    | 57    | 56    | 55    | 52    |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 |
|------------------|------|------|------|------|-------|-------|-------|-------|------|------|
| Alaska pollock   | 0.14 | 0.14 | 0.14 | 0.16 | 0.14  | 0.13  | 0.16  | 0.12  | 0.13 | 0.13 |
| American lobster | 3.08 | 3.44 | 3.35 | 2.86 | 3.06  | 3.83  | 4.23  | 4.20  | 4.14 | 4.27 |
| Blue crab        | 0.92 | 1.03 | 0.91 | 1.05 | 1.41  | 1.54  | 1.42  | 1.31  | 1.34 | 1.40 |
| Menhaden         | 0.06 | 0.07 | 0.08 | 0.07 | 0.09  | 0.10  | 0.11  | 0.10  | 0.08 | 0.10 |
| Pacific halibut  | 2.33 | 3.65 | 4.96 | 4.47 | 3.90  | 4.94  | 4.85  | 5.03  | 4.73 | 4.05 |
| Pacific salmon   | 0.59 | 0.72 | 0.85 | 0.91 | 0.71  | 0.86  | 0.47  | 0.75  | 0.78 | 1.04 |
| Sablefish        | 2.71 | 3.16 | 4.29 | 3.44 | 2.58  | 3.13  | 3.26  | 3.47  | 3.87 | 2.84 |
| Sea scallop      | 6.48 | 7.90 | 9.89 | 9.83 | 11.40 | 12.55 | 12.32 | 12.00 | 9.85 | 9.20 |
| Shrimp           | 1.23 | 1.55 | 1.65 | 1.61 | 2.00  | 2.12  | 1.46  | 1.75  | 1.82 | 1.65 |
| Tunas            | 1.94 | 2.25 | 2.73 | 2.75 | 2.62  | 2.29  | 2.41  | 2.81  | 2.81 | 2.87 |

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs   | Sales      | Income     | Value Added |
|------------------------------|--------------|---------|------------|------------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 25,017  | 3,108,053  | 1,035,244  | 1,770,037   |
|                              | Private Boat | 54,018  | 8,966,815  | 2,813,556  | 5,090,187   |
|                              | Shore        | 76,944  | 11,113,999 | 3,689,811  | 6,452,518   |
| Total Durable Expenditures   |              | 313,869 | 49,272,950 | 16,729,277 | 27,420,331  |
| Total Impacts                |              | 469,848 | 72,461,817 | 24,267,888 | 40,733,073  |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 1,310,444         | Fishing Tackle             | 3,742,314                  |
| Private Boat                                    | 3,900,474         | Other Equipment            | 1,941,108                  |
| Shore   | 4,709,971         | Boat Expenses              | 14,945,131                 |
| Total   | 9,920,888         | Vehicle Expenses           | 3,363,548                  |
|   |                   | Second Home Expenses       | 2,147,395                  |
|   |                   | Total Durable Expenditures | 26,139,496                 |
| Total State Trip and Durable Goods Expenditures |                   |                            | 36,060,384                 |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015  | 2016   | 2017  | 2018  |
|---------------|--------|--------|--------|--------|--------|--------|-------|--------|-------|-------|
| Coastal       | 9,571  | 9,839  | 9,446  | 9,461  | 9,821  | 9,585  | 8,483 | 8,744  | 7,892 | 7,107 |
| Non-Coastal   | 1,445  | 1,489  | 1,420  | 1,436  | 1,419  | 1,373  | 1,319 | 1,326  | 1,247 | 1,190 |
| Total Anglers | 11,016 | 11,328 | 10,866 | 10,896 | 11,240 | 10,958 | 9,801 | 10,070 | 9,139 | 8,296 |

**Recreational Fishing Effort by Mode (thousands of angler trips)<sup>2,3</sup>**

|             | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| For-Hire    | 3,612   | 2,939   | 3,585   | 3,760   | 4,330   | 4,540   | 4,500   | 3,729   | 3,946   | 4,019   |
| Private     | 87,760  | 92,460  | 88,601  | 87,819  | 84,505  | 78,553  | 73,747  | 73,488  | 74,623  | 69,502  |
| Shore       | 129,285 | 133,434 | 131,262 | 129,981 | 128,950 | 124,132 | 120,017 | 122,148 | 126,649 | 119,836 |
| Total Trips | 220,657 | 228,833 | 223,448 | 221,560 | 217,786 | 207,224 | 198,264 | 199,365 | 205,218 | 193,357 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>4,5</sup>**

|   |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Dolphinfish (Western Pacific and Atlantic)                | H | 2,424  | 1,851  | 3,080  | 2,509  | 2,460  | 2,586  | 4,080  | 1,963  | 2,546  | 3,165  |
|   | R | 340    | 496    | 1,356  | 496    | 3,372  | 1,338  | 1,952  | 341    | 839    | 883    |
| Drum (Atlantic croaker and spot) (Atlantic regions)       | H | 42,568 | 40,953 | 43,579 | 42,048 | 53,580 | 56,250 | 35,598 | 29,356 | 38,096 | 24,958 |
|   | R | 53,837 | 47,751 | 56,743 | 63,520 | 81,918 | 56,454 | 41,335 | 41,899 | 43,216 | 37,192 |
| Drum (seatrouts) (Atlantic regions)                       | H | 40,051 | 37,342 | 43,229 | 45,404 | 36,529 | 17,051 | 19,386 | 25,143 | 27,304 | 18,312 |
|   | R | 61,616 | 64,045 | 72,817 | 78,095 | 64,490 | 38,680 | 41,357 | 56,323 | 58,562 | 52,533 |
| Pacific halibut (North Pacific)                           | H | 440    | 398    | 394    | 388    | 454    | 408    | 420    | 400    | 352    | 352    |
|   | R | 321    | 304    | 311    | 324    | 324    | 251    | 271    | 244    | 199    | 184    |
| Pacific salmon (Pacific and North Pacific)                | H | 1,149  | 733    | 813    | 743    | 1,080  | 1,239  | 1,073  | 613    | 904    | 614    |
|   | R | 771    | 390    | 508    | 392    | 634    | 486    | 559    | 326    | 446    | 340    |
| Rockfishes and scorpionfishes (Pacific and North Pacific) | H | 2,393  | 2,402  | 3,071  | 3,633  | 4,131  | 4,349  | 4,171  | 3,809  | 3,898  | 3,753  |
|   | R | 518    | 601    | 681    | 756    | 991    | 955    | 914    | 866    | 1,004  | 1,030  |
| Striped bass (Atlantic regions)                           | H | 4,746  | 5,430  | 5,049  | 4,077  | 5,217  | 4,055  | 3,141  | 3,528  | 3,011  | 2,456  |
|   | R | 21,880 | 19,850 | 17,032 | 21,049 | 26,985 | 24,521 | 25,991 | 34,183 | 41,734 | 33,273 |
| Summer flounder (Atlantic regions)                        | H | 3,715  | 3,540  | 4,366  | 5,758  | 6,625  | 5,373  | 4,051  | 4,306  | 3,237  | 2,431  |
|   | R | 47,039 | 55,389 | 51,722 | 38,969 | 38,362 | 39,214 | 30,141 | 26,951 | 24,911 | 21,141 |
| Tunas (Atlantic regions)                                  | H | 247    | 225    | 302    | 386    | 383    | 209    | 224    | 280    | 312    | 340    |
|   | R | 46     | 50     | 116    | 55     | 26     | 52     | 22     | 71     | 58     | 82     |
| Tunas (Pacific and Western Pacific regions)               | H | 439    | 563    | 370    | 681    | 730    | 887    | 847    | 486    | 682    | 627    |
|   | R | 88     | 47     | 98     | 30     | 37     | 213    | 147    | 122    | 263    | 173    |

<sup>1</sup> All anglers reported in this table are U.S. residents.<sup>2</sup> Effort for 2014-2018 in Louisiana is estimated using data from a state creel survey and does not capture shore-based effort separately from private boat effort. Hawai'i trip estimates are not available for the for-hire mode. Oregon, Texas, and Washington trip estimates are not available for the shore mode.<sup>4</sup> Atlantic Regions refer to those states within New England, Mid-Atlantic, South Atlantic, and the Gulf of Mexico.<sup>5</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

### 2017 United States Economy

| #Non-Employer Firms (millions) | #Establishments (millions) | #Employees (millions) | Annual Payroll (\$ trillions) | Employee Compensation (\$ trillions) | Gross Domestic Product (\$ trillions) | Commercial Location Quotient <sup>1</sup> |
|--------------------------------|----------------------------|-----------------------|-------------------------------|--------------------------------------|---------------------------------------|---|
| 25.7                           | 7.9                        | 129                   | 6.7                           | 10.3                                 | 19.6                                  | 1   |

### Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                     |          | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|-------------------------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Seafood product prep. and packaging | Firms    | 1,395   | 1,617   | 1,757   | 1,766   | 1,812   | 1,947   | 2,108   | 2,208   | 2,242   |
|                                     | Receipts | 95,219  | 104,990 | 110,745 | 115,167 | 128,927 | 146,626 | 163,625 | 176,593 | 175,735 |
| Seafood sales, retail               | Firms    | 2,455   | 2,513   | 2,514   | 2,657   | 2,497   | 2,557   | 2,471   | 2,392   | 2,428   |
|                                     | Receipts | 207,139 | 199,810 | 212,679 | 217,702 | 205,555 | 203,459 | 206,676 | 207,428 | 214,481 |

### Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                                     |                | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      |
|-------------------------------------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Seafood product prep. and packaging | Establishments | 645       | 638       | 620       | 589       | 604       | 640       | 618       | 586       | 551       |
|                                     | Employees      | 30,894    | 31,789    | 31,261    | 30,988    | 31,390    | 32,180    | 30,708    | 30,554    | 31,801    |
|                                     | Payroll        | 1,091,727 | 1,116,305 | 1,200,263 | 1,196,207 | 1,228,826 | 1,311,910 | 1,354,572 | 1,380,087 | 1,458,900 |
| Seafood sales, wholesale            | Establishments | 2,099     | 2,183     | 2,287     | 1,954     | 2,098     | 2,100     | 2,132     | 2,176     | 1,998     |
|                                     | Employees      | 19,290    | 19,386    | 20,622    | 20,030    | 20,367    | 21,155    | 22,060    | 22,273    | 21,914    |
|                                     | Payroll        | 758,332   | 798,794   | 848,454   | 867,179   | 884,645   | 910,527   | 999,264   | 1,036,051 | 1,039,198 |
| Seafood sales, retail               | Establishments | 1,967     | 1,982     | 1,972     | 1,957     | 1,995     | 2,015     | 2,059     | 2,067     | 1,960     |
|                                     | Employees      | 9,439     | 9,857     | 10,006    | 10,293    | 10,631    | 11,037    | 11,443    | 12,114    | 10,757    |
|                                     | Payroll        | 211,264   | 219,045   | 222,508   | 237,619   | 253,490   | 271,732   | 292,726   | 312,224   | 279,757   |

### Transport, Support, and Marine Operations — Employer Establishments (thousands of dollars)<sup>2</sup>

|  |                | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      |
|--|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Ship and Boat Building                         | Establishments | 1,615     | 1,540     | 1,497     | 1,560     | 1,514     | 1,524     | 1,541     | 1,508     | 1,463     |
|  | Employees      | 137,759   | 127,691   | 127,522   | 136,365   | 135,287   | 138,687   | 143,287   | 140,179   | 137,300   |
|  | Payroll        | 6,674,187 | 6,529,523 | 6,845,322 | 7,543,402 | 7,556,373 | 7,882,846 | 8,030,983 | 7,951,338 | 7,914,193 |
| Deep Sea Freight Transportation                | Establishments | 376       | 372       | 378       | 375       | 305       | 332       | 350       | 313       | 276       |
|  | Employees      | 11,180    | 10,288    | 10,362    | 12,375    | 8,704     | 8,646     | 8,014     | 7,009     | 6,515     |
|  | Payroll        | 863,363   | 867,797   | 921,990   | 1,073,529 | 703,003   | 683,281   | 671,624   | 638,900   | 654,461   |
| Deep Sea Passenger Transportation              | Establishments | 78        | 56        | 55        | 58        | 62        | 56        | 61        | 62        | 69        |
|  | Employees      | ds        | ds        | ds        | ds        | ds        | ds        | 15,157    | 14,596    | 15,128    |
|  | Payroll        | ds        | ds        | ds        | ds        | ds        | ds        | 1,246,384 | 1,155,308 | 1,299,990 |
| Coastal and Great Lakes Freight Transportation | Establishments | 513       | 547       | 549       | 496       | 497       | 598       | 593       | 603       | 581       |
|  | Employees      | 20,919    | 17,528    | 18,590    | 19,099    | 18,659    | 20,884    | 19,983    | 19,004    | 17,799    |
|  | Payroll        | 1,470,159 | 1,288,001 | 1,400,267 | 1,467,709 | 1,512,053 | 1,835,024 | 1,746,612 | 1,677,305 | 1,600,861 |
| Port and Harbor Operations                     | Establishments | 258       | 287       | 255       | 525       | 383       | 351       | 337       | 332       | 335       |
|  | Employees      | 5,100     | 4,844     | 4,933     | 25,396    | 7,000     | 6,769     | 7,855     | 8,003     | 9,005     |
|  | Payroll        | 250,358   | 290,467   | 306,882   | 1,345,857 | 420,664   | 399,502   | 434,209   | 424,370   | 503,197   |
| Marine Cargo Handling                          | Establishments | 541       | 507       | 545       | 343       | 458       | 482       | 492       | 492       | 480       |
|  | Employees      | 56,386    | 57,275    | 59,517    | 43,824    | 66,301    | 69,830    | 66,414    | 62,680    | 58,663    |
|  | Payroll        | 2,776,791 | 3,026,861 | 3,159,964 | 2,601,146 | 4,086,182 | 4,406,525 | 4,334,958 | 4,392,350 | 4,514,115 |
| Navigational Services to Shipping              | Establishments | 846       | 847       | 836       | 850       | 847       | 881       | 889       | 877       | 1,032     |
|  | Employees      | 12,689    | 13,529    | 13,441    | 12,532    | 12,485    | 12,148    | 11,864    | 12,457    | 13,635    |
|  | Payroll        | 826,384   | 937,980   | 893,889   | 838,959   | 929,419   | 907,763   | 923,303   | 920,450   | 1,056,307 |
| Marinas  | Establishments | 3,891     | 3,937     | 3,896     | 3,782     | 3,844     | 3,811     | 3,881     | 3,826     | 3,669     |
|  | Employees      | 26,643    | 26,657    | 26,557    | 25,764    | 26,373    | 26,709    | 26,999    | 27,471    | 26,825    |
|  | Payroll        | 905,488   | 927,499   | 953,497   | 913,140   | 951,123   | 995,248   | 1,036,253 | 1,081,496 | 1,050,970 |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.



# North Pacific Region

- Alaska



Commercial fishermen pulling up black sea bass pot traps in Alaska.  
Photo: NOAA Fisheries/Noelle Olsen



## MANAGEMENT CONTEXT

The North Pacific Region includes the fisheries in the Exclusive Economic Zone (EEZ) off the state of Alaska. Federal fisheries in this region are managed by the North Pacific Fishery Management Council (NPFMC) and NOAA Fisheries under six fishery management plans (FMPs).

### North Pacific Region FMPs

- Bering Sea/Aleutian Islands (BSAI) groundfish
- Gulf of Alaska (GOA) groundfish
- BSAI king and tanner crabs
- Alaska scallop
- Salmon in the EEZ
- Arctic

Of the stocks or stock complexes covered in these FMPs, only the blue king crab (Pribilof Islands stock and St. Matthew Island stock) are listed as overfished. No stocks were listed as subject to overfishing.

## Catch Share Programs

The North Pacific Region has seven catch share programs, more than any other region. These are the: 1) Western Alaska Community Development Quota (CDQ) Program; 2) Alaska Halibut and Sablefish IFQ Program; 3) American Fisheries Act (AFA) Pollock Cooperatives; 4) Bering Sea and Aleutian Islands (BSAI) King and Tanner Crab Rationalization Program; 5) Aleutian Islands Pollock Fishery; 6) Bering Sea and Aleutian Islands (BSAI) Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80); and 7) Central Gulf of Alaska (GOA) Rockfish Program (pilot implemented in 2007). Excluding the Western Alaska CDQ and Aleutian Islands Pollock Fishery programs, the landings revenues for these programs totaled \$950 million (in inflation-adjusted 2018 dollars) in 2017, exceeding the total landings revenue of any other state. The following are descriptions of these catch share programs and some key performance indicators.

**Western Alaska Community Development Quota (CDQ) Program:** The program was originally implemented in 1992 as part of a restructuring of the BSAI groundfish fishery. Under this program, a percentage of the total allowable catch for groundfish, prohibited spe-

cies, halibut, and crab is apportioned to 65 eligible villages in Western Alaska that are organized into six CDQ groups. The program has the following goals: 1) Provide eligible Western Alaska villages with the opportunity to participate and invest in fisheries in the Bering Sea and Aleutian Islands Management Area; 2) Support economic development in Western Alaska; 3) Alleviate poverty and provide economic and social benefits to residents; and 4) Achieve a sustainable and diversified local economy.

**Alaska Halibut and Sablefish IFQ Program:** The program was implemented in 1995. The primary objectives of this IFQ program include the following: 1) Eliminate gear conflicts; 2) Address safety concerns; and 3) Improve product quality. The 2017 key performance indicators of the halibut program show that relative to the baseline period, quota, landings, and the number of active vessels decreased, while inflation-adjusted landings revenue and inflation-adjusted revenue per active vessel increased. The 2017 key performance indicators of the sablefish program show that relative to the baseline period, quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per vessel increased.

**American Fisheries Act (AFA) Pollock Cooperatives:** The program was established in 1999 and 2000 with the goals of settling allocation disputes between inshore (catcher vessels), offshore (catcher/processors), and mothership sectors, and ending the race for fish. The 2017 key performance indicators of the program show that relative to the baseline period, the number of active vessels decreased, while quota, landings, inflation-adjusted landings revenue, and inflation-adjusted revenue per active vessel increased.

**Bering Sea and Aleutian Islands (BSAI) King and Tanner Crab Rationalization Program:** The program was implemented for the 2005–2006 crab fishing season to address the race to harvest; high bycatch and discard mortality; and product quality issues. The program also aims to balance the interests of those who depend on crab fisheries. This program includes share allocations to harvesters and processors. Processor quota was incorporated to preserve the viability of processing facilities in dependent communities and, particularly, to maintain

competitive conditions in ex-vessel markets. The CDQ and Adak Community allocations, regional landings and processing requirements, and several community protection measures serve to protect community interests. The 2017/2018 key performance indicators of the program show that relative to the baseline period, quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per active vessel increased.

**Aleutian Islands Pollock Fishery:** In 2005, Amendment 82 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area established a framework for the management of the Aleutian Islands (AI) subarea directed pollock fishery. The FMP Amendment was proposed by the North Pacific Fishery Management Council to implement a provision of the Consolidated Appropriations Act of 2004 (Public Law 108-199, Sec. 803), which requires that the AI directed pollock fishery be allocated to the Aleut Corporation for the purpose of economic development in Adak, Alaska.

**BSAI Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80):** The program, commonly referred to as the Amendment 80 Program, was implemented in 2008 to create economic incentives that would improve retention of all fish caught. The cooperatives also seek to reduce bycatch by commercial fishing vessels using trawl gear in the non-pollock groundfish fisheries. The 2017 key performance indicators of the program show that relative to the baseline period, quota and the number of active vessels decreased, while landings, inflation-adjusted landings revenue, and inflation-adjusted revenue per active vessel increased.

**Central Gulf of Alaska Rockfish Program:** The program was initially established as a two-year (2007–2008) pilot program by the U.S. Congress and was later extended to five years. NOAA Fisheries implemented this catch share program in 2012. The objectives of this program are to reduce bycatch and discards, encourage conservation-minded practices, improve product quality and value, and provide stability to the processing labor force. The 2017 key performance indicators of the program show that relative to the baseline period, quota, landings, the number of active vessels, inflation-adjusted

landings revenue, and inflation-adjusted revenue per active vessel all increased.

COMMERCIAL FISHERIES — NORTH PACIFIC REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

Key North Pacific Commercial Species

- Alaska pollock
- Atka mackerel
- Crab
- Flatfish
- Pacific cod
- Pacific halibut
- Pacific herring
- Rockfish
- Sablefish
- Salmon

The North Pacific groundfish fishery is different from most other United States fisheries in that a large portion of the fishery is processed at sea and, therefore, no landings revenues are reported. The landings revenue for the species landed and processed at sea is estimated by using prices obtained from the shore-side sector. These species include Atka mackerel, flatfish, Pacific cod, rockfish, sablefish, and Alaska pollock. When data from the shore-side sector are inadequate, historical information about the relationship between the ex-vessel price and the wholesale price of finished products is used to estimate ex-vessel prices and revenue for portions of the fishery mostly processed at sea.

Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry supported 53,590 full- and part-time jobs and generated \$4.4 billion in sales, \$1.9 billion in income, and \$2.4 billion in value-added impacts in the North Pacific Region. Commercial harvesters generated the largest sales impacts (\$3.1 billion), value-added impacts (\$1.7 billion), income impacts (\$1.4 billion), and employment impacts (38,653 jobs).

## Landings Revenue

In 2018, landings revenue in the North Pacific Region totaled \$1.8 billion, a 37% increase from 2009 (an 18% increase in real terms after adjusting for inflation) and an 11% decrease from 2017.

Finfish landings revenue accounted for 90% of all landings revenue. In 2018, salmon (\$553.5 million), Alaska pollock (\$451.2 million), and Pacific cod (\$238.9 million) had the highest landings revenue in this region. Together, these top three species accounted for 70% of total landings revenue.

From 2009 to 2018, Pacific cod (143%, 109% in real terms), rockfish (138%, 105% in real terms), and Atka mackerel (83%, 106% in real terms) had the largest increases, while Pacific herring (-72%, -76% in real terms), Pacific halibut (-39%, -47% in real terms), and flatfish (-20%, -31% in real terms) had the largest decreases. From 2017 to 2018, Pacific cod (23%), rockfish (12%) and Atka mackerel (8%) had the largest increases, while Pacific halibut (-29%), salmon (-26%), and sablefish (-25%) had the largest decreases.

### Commercial Revenue: Largest Increases

*From 2009:*

- Pacific cod (143%, 109% in real terms)
- Rockfish (138%, 105% in real terms)
- Atka mackerel (83%, 106% in real terms)

*From 2017:*

- Pacific cod (23%)
- Rockfish (12%)
- Atka mackerel (8%)

### Commercial Revenue: Largest Decreases

*From 2009:*

- Pacific herring (-72%, -76% in real terms)
- Pacific halibut (-39%, -47% in real terms)
- Flatfish (-20%, -31% in real terms)

*From 2017:*

- Pacific halibut (-29%)
- Salmon (-26%)
- Sablefish (-25%)

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

## Landings

In 2018, North Pacific Region commercial fishermen landed over 5.4 billion pounds of finfish and shellfish. This represents a 33% increase from 2009 and a 10% decrease from 2017. Alaska pollock contributed the highest landings volume in the region, accounting for 62% of total landing weight.

From 2009 to 2018, rockfish (84%) and Alaska pollock (80%) had the largest increases, while Pacific halibut (-65%), crab (-56%), and Pacific herring (-47%) had the largest decreases. From 2017 to 2018, rockfish (12%), Atka mackerel (10%) and sablefish (4%) had the largest increases, while salmon (-44%), Pacific herring (-33%), and Pacific cod (-22%) had the largest decreases.

### Commercial Landings: Largest Increases

*From 2009:*

- Rockfish (84%)
- Alaska pollock (80%)

*From 2017:*

- Rockfish (12%)
- Atka mackerel (10%)
- Sablefish (4%)

### Commercial Landings: Largest Decreases

*From 2009:*

- Pacific halibut (-65%)
- Crab (-56%)
- Pacific herring (-47%)

*From 2017:*

- Salmon (-44%)
- Pacific herring (-33%)
- Pacific cod (-22%)

## Prices

In 2018, Pacific halibut (\$4.06 per pound) received the highest ex-vessel price in the region. Landings of Alaska pollock (\$0.13 per pound) had the lowest ex-vessel price. From 2009 to 2018, Pacific cod (132%, 100% in real terms), crab (88%, 62% in real terms), and Atka mackerel (87%, 61% in real terms) had the largest increases, while Pacific herring (-47%, -54% in real terms), flatfish (-4%, -17% in real terms), and Alaska

pollock (-1%, -15% in real terms) had the largest decreases. From 2017 to 2018, Pacific cod (58%), salmon (31%), and Pacific herring (24%) had the largest increases, while sablefish (-29%), Pacific halibut (-14%), and crab (-13%) had the largest decreases.

## RECREATIONAL FISHERIES — NORTH PACIFIC REGION

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>3</sup>

### Key North Pacific Recreational Species<sup>4</sup>

- Chinook salmon
- Chum salmon
- Coho salmon
- Lingcod
- Pacific cod
- Pacific halibut
- Pink salmon
- Rockfish species
- Sablefish/black cod
- Shark species
- Sockeye salmon

## Economic Impacts and Expenditures

The economic contribution of recreational fishing activities in the North Pacific Region is based on spending by recreational anglers.<sup>5</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>6</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that

<sup>3</sup> Information reported in this table is from the Sport Fish Division of the Alaska Department of Fish and Game (ADF&G) for saltwater fishing activities.



original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

In 2018, economic impacts from recreational fishing activities in the North Pacific Region generated 5,360 jobs, \$558.4 million in sales, \$195 million in income, and \$325.7 million in value-added impacts. Impacts from durable equipment expenditures (e.g., rods and reels, fishing-related equipment, boats, vehicles, and second homes) accounted for 28% of employment, 21% of sales, 24% of income, and 22% of value-added impacts.

Expenditures for fishing trips and durable equipment across the North Pacific Region in 2018 totaled \$460 million. This total included \$125.4 million in durable goods expenditures, with the largest portion coming from boat expenses (\$55.5 million).

## Participation

In 2018, there were 296,238 recreational anglers who fished in the North Pacific Region. This number represented a 4% increase from 2009 and remains unchanged from 2017. The anglers are categorized as either out-of-

state anglers (63%) or residents of coastal/non-coastal county (37%).

## Days Fished

The state of Alaska records recreational fishing effort in terms of the number of days fished, rather than the number of fishing trips. Anglers who fished in Alaska spent approximately 773,700 days fishing in 2018. This number represented a 7% decrease from the days spent fishing in 2009. From 2017 to 2018, there was a 5% decrease in the number of days fished.

## Harvest and Release Trends

Of the North Pacific Region's key species and species groups, Pacific halibut (536,312 fish), rockfish species (459,603 fish), and coho salmon (341,932 fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, sockeye salmon (3%) had the largest increases, while Pacific cod (-73%), chum salmon (-62%), and pink salmon (-49%) had the largest decreases. From 2017 to 2018, shark species (85%), lingcod (46%), and sablefish/black cod (21%) had the largest increases, while Pacific cod (-37%), pink salmon (-36%), and chum salmon (-32%) had the largest decreases.

<sup>4</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>5</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>6</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-unit-ed-states-interactive-tool>.]

**Harvest and Release: Largest Increases***From 2009:*

- Sockeye salmon (3%)

*From 2017:*

- Shark species (85%)
- Lingcod (46%)
- Sablefish/black cod (21%)

**Harvest and Release: Largest Decreases***From 2009:*

- Pacific cod (-73%)
- Chum salmon (-62%)
- Pink salmon (-49%)

*From 2017:*

- Pacific cod (-37%)
- Pink salmon (-36%)
- Chum salmon (-32%)

**MARINE ECONOMY — NORTH PACIFIC REGION**

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>7</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>8</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

The Bureau of Labor Statistics suppressed the CFLQ value for Alaska for 2017.

In 2017, 21,279 employer establishments operated in Alaska (including marine and non-marine related establishments). These establishments employed 262,075 workers and had a total annual payroll of \$15 billion. The gross state product of Alaska was \$54.4 billion in 2017.<sup>9</sup>

**Seafood Sales and Processing**

**Seafood Product Preparation and Packaging:** In 2017, Alaska had 20 non-employer firms in the seafood product preparation and packaging sector (a 38% decrease from 2009). Annual receipts for these firms totaled \$1.8 million. There were 94 employer firms in this sector (a 22% decrease from 2009). These establishments employed 8,553 workers (a 13% increase from 2009) and had a total annual payroll of \$347.5 million.

**Seafood Sales, Retail:** In 2017, there were 20 non-employer firms in seafood retail sales in Alaska (a 25% increase from 2009). Annual receipts for these firms totaled \$1.4 million. There were 14 employer firms in the seafood retail sector (a 40% increase from 2009). These establishments employed 53 workers (a 20% increase from 2009) and had a total annual payroll of \$1.8 million.

**Seafood Sales, Wholesale:** There were 36 employer firms in the seafood wholesale sector in Alaska in 2017 (a 33% decrease from 2009). These establishments employed 277 workers and had a total annual payroll of \$22.7 million.<sup>10</sup>

**Transportation Support and Marine Operations**

Data for the transportation support and marine operations sectors of Alaska's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the coastal and Great Lakes freight transportation sector in Alaska accounted for \$86.2 million in payroll.

<sup>7</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>8</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>9</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

<sup>10</sup> The Census Bureau suppressed data on number of employees for this sector in this region in either 2017 or 2009, and thus cannot be compared.



# Tables | Alaska





## Alaska | Commercial Fisheries

## 2018 Economic Impacts of the Alaska Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 53,590       | 4,387 | 1,945  | 2,413       | 53,488          | 4,364 | 1,941  | 2,405       |
| Commercial Harvesters              | 38,653       | 3,066 | 1,377  | 1,703       | 38,653          | 3,066 | 1,377  | 1,703       |
| Seafood Processors & Dealers       | 11,706       | 1,106 | 483    | 598         | 11,689          | 1,105 | 482    | 598         |
| Importers                          | 59           | 19    | 3      | 6           | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 358          | 44    | 15     | 20          | 348             | 43    | 15     | 19          |
| Retail                             | 2,814        | 152   | 67     | 86          | 2,798           | 151   | 67     | 86          |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (millions of dollars)

|                    | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total              | 1,303 | 1,643 | 2,021 | 1,969 | 1,878 | 1,712 | 1,768 | 1,551 | 2,003 | 1,782 |
| Finfish            | 1,103 | 1,404 | 1,712 | 1,639 | 1,632 | 1,459 | 1,474 | 1,315 | 1,812 | 1,610 |
| Shellfish          | 196   | 236   | 303   | 322   | 240   | 248   | 288   | 230   | 184   | 162   |
| Other              | 4     | 4     | 7     | 8     | 7     | 5     | 6     | 6     | 7     | 10    |
| <b>Key Species</b> |       |       |       |       |       |       |       |       |       |       |
| Alaska pollock     | 254   | 280   | 402   | 453   | 406   | 400   | 509   | 417   | 457   | 451   |
| Atka mackerel      | 30    | 31    | 30    | 31    | 15    | 22    | 31    | 32    | 51    | 55    |
| Crab               | 185   | 222   | 290   | 309   | 230   | 238   | 279   | 219   | 173   | 152   |
| Flatfish           | 202   | 277   | 306   | 260   | 227   | 201   | 175   | 183   | 200   | 161   |
| Pacific cod        | 99    | 146   | 163   | 171   | 156   | 153   | 174   | 171   | 194   | 239   |
| Pacific halibut    | 135   | 200   | 205   | 145   | 111   | 107   | 111   | 117   | 116   | 83    |
| Pacific herring    | 24    | 22    | 11    | 22    | 16    | 11    | 7     | 5     | 8     | 7     |
| Rockfish           | 14    | 22    | 34    | 33    | 35    | 28    | 29    | 30    | 31    | 34    |
| Sablefish          | 88    | 98    | 140   | 120   | 82    | 86    | 86    | 86    | 113   | 86    |
| Salmon             | 388   | 521   | 612   | 533   | 680   | 546   | 455   | 381   | 745   | 553   |

## Total Landings and Landings of Key Species/Species Groups (millions of pounds)

|                    | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total              | 4,071 | 4,349 | 5,355 | 5,346 | 5,792 | 5,671 | 6,014 | 5,586 | 6,006 | 5,404 |
| Finfish            | 3,975 | 4,264 | 5,269 | 5,229 | 5,699 | 5,579 | 5,907 | 5,511 | 5,960 | 5,356 |
| Shellfish          | 94    | 84    | 85    | 116   | 91    | 91    | 105   | 73    | 45    | 46    |
| Other              | 2     | 1     | 1     | 2     | 2     | 1     | 2     | 2     | 2     | 2     |
| <b>Key Species</b> |       |       |       |       |       |       |       |       |       |       |
| Alaska pollock     | 1,869 | 1,948 | 2,811 | 2,872 | 3,003 | 3,146 | 3,263 | 3,355 | 3,389 | 3,364 |
| Atka mackerel      | 157   | 145   | 113   | 104   | 51    | 70    | 118   | 121   | 143   | 157   |
| Crab               | 90    | 80    | 80    | 112   | 87    | 85    | 97    | 69    | 39    | 39    |
| Flatfish           | 544   | 595   | 633   | 631   | 641   | 637   | 494   | 511   | 488   | 453   |
| Pacific cod        | 491   | 539   | 663   | 717   | 681   | 717   | 697   | 707   | 657   | 512   |
| Pacific halibut    | 58    | 55    | 41    | 32    | 29    | 22    | 23    | 23    | 25    | 20    |
| Pacific herring    | 87    | 108   | 99    | 75    | 85    | 97    | 68    | 52    | 68    | 46    |
| Rockfish           | 84    | 100   | 106   | 115   | 123   | 133   | 142   | 146   | 138   | 155   |
| Sablefish          | 29    | 27    | 29    | 31    | 30    | 26    | 24    | 22    | 26    | 27    |
| Salmon             | 671   | 757   | 738   | 612   | 1,013 | 683   | 1,041 | 543   | 986   | 557   |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| Alaska pollock  | 0.14 | 0.14 | 0.14 | 0.16 | 0.14 | 0.13 | 0.16 | 0.12 | 0.13 | 0.13 |
| Atka mackerel   | 0.19 | 0.21 | 0.27 | 0.29 | 0.30 | 0.32 | 0.26 | 0.26 | 0.36 | 0.35 |
| Crab            | 2.06 | 2.79 | 3.61 | 2.76 | 2.64 | 2.79 | 2.87 | 3.19 | 4.46 | 3.88 |
| Flatfish        | 0.37 | 0.47 | 0.48 | 0.41 | 0.35 | 0.31 | 0.35 | 0.36 | 0.41 | 0.36 |
| Pacific cod     | 0.20 | 0.27 | 0.25 | 0.24 | 0.23 | 0.21 | 0.25 | 0.24 | 0.30 | 0.47 |
| Pacific halibut | 2.33 | 3.65 | 4.97 | 4.47 | 3.88 | 4.93 | 4.84 | 5.03 | 4.74 | 4.06 |
| Pacific herring | 0.27 | 0.20 | 0.11 | 0.29 | 0.19 | 0.12 | 0.10 | 0.10 | 0.12 | 0.15 |
| Rockfish        | 0.17 | 0.22 | 0.32 | 0.29 | 0.28 | 0.21 | 0.21 | 0.21 | 0.22 | 0.22 |
| Sablefish       | 3.01 | 3.60 | 4.84 | 3.82 | 2.72 | 3.37 | 3.62 | 3.93 | 4.43 | 3.15 |
| Salmon          | 0.58 | 0.69 | 0.83 | 0.87 | 0.67 | 0.80 | 0.44 | 0.70 | 0.76 | 0.99 |

**2018 Economic Impacts of Alaska Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 2,969 | 300,645 | 104,237 | 168,849     |
|                              | Private Boat | 837   | 130,145 | 39,937  | 79,194      |
|                              | Shore        | 70    | 9,584   | 3,209   | 5,958       |
| Total Durable Expenditures   |              | 1,484 | 118,017 | 47,658  | 71,739      |
| Total State Economic Impacts |              | 5,360 | 558,391 | 195,040 | 325,739     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)<sup>1</sup>**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 208,790           | Fishing Tackle             | 27,888                     |
| Private Boat                                    | 117,431           | Other Equipment            | 37,437                     |
| Shore   | 8,384             | Boat Expenses              | 55,484                     |
| Total   | 334,605           | Vehicle Expenses           | 4,608                      |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 125,417                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 460,022                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|                     | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------|------|------|------|------|------|------|------|------|------|------|
| Coastal/Non-Coastal | 127  | 122  | 124  | 118  | 129  | 122  | 128  | 115  | 117  | 110  |
| Out-of-State        | 158  | 159  | 161  | 160  | 178  | 170  | 181  | 181  | 178  | 186  |
| Total Anglers       | 284  | 281  | 286  | 278  | 307  | 292  | 309  | 296  | 295  | 296  |

**Recreational Fishing Effort by Mode (thousands of angler fishing days)<sup>2</sup>**

|                   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Total Days Fished | 831  | 738  | 737  | 735  | 897  | 876  | 890  | 782  | 812  | 774  |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>3,4,5</sup>**

|                     |   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------|---|------|------|------|------|------|------|------|------|------|------|
| Chinook salmon      | H | 89   | 78   | 85   | 63   | 81   | 111  | 111  | 101  | 85   | 62   |
|                     | R | 96   | 66   | 95   | 62   | 120  | 94   | 116  | 87   | 106  | 74   |
| Chum salmon         | H | 22   | 11   | 21   | 11   | 25   | 12   | 13   | 10   | 10   | 6    |
|                     | R | 34   | 19   | 38   | 20   | 39   | 19   | 25   | 22   | 22   | 16   |
| Coho salmon         | H | 418  | 350  | 386  | 263  | 493  | 390  | 479  | 263  | 468  | 297  |
|                     | R | 94   | 74   | 88   | 50   | 122  | 60   | 99   | 41   | 71   | 45   |
| Lingcod             | H | 32   | 32   | 33   | 33   | 34   | 32   | 28   | 26   | 22   | 29   |
|                     | R | 46   | 39   | 36   | 36   | 33   | 29   | 27   | 23   | 27   | 43   |
| Pacific cod         | H | 36   | 37   | 48   | 42   | 38   | 61   | 58   | 44   | 20   | 15   |
|                     | R | 63   | 81   | 76   | 50   | 48   | 73   | 75   | 43   | 24   | 12   |
| Pacific halibut     | H | 440  | 398  | 394  | 388  | 454  | 408  | 420  | 400  | 352  | 352  |
|                     | R | 321  | 304  | 311  | 324  | 324  | 251  | 271  | 244  | 199  | 184  |
| Pink salmon         | H | 117  | 82   | 72   | 78   | 113  | 69   | 110  | 103  | 102  | 70   |
|                     | R | 224  | 121  | 135  | 141  | 203  | 118  | 204  | 126  | 170  | 104  |
| Rockfish species    | H | 209  | 224  | 211  | 230  | 256  | 335  | 332  | 347  | 279  | 309  |
|                     | R | 149  | 151  | 122  | 121  | 121  | 148  | 143  | 157  | 129  | 150  |
| Sablefish/black cod | H | 0    | 9    | 10   | 18   | 18   | 12   | 23   | 15   | 22   | 26   |
|                     | R | 0    | 7    | 8    | 9    | 6    | 6    | 13   | 4    | 6    | 8    |
| Shark species       | H | < 1  | < 1  | < 1  | < 1  | < 1  | 2    | < 1  | < 1  | < 1  | < 1  |
|                     | R | 33   | 29   | 14   | 13   | 11   | 28   | 20   | 16   | 10   | 17   |
| Sockeye salmon      | H | 34   | 28   | 31   | 28   | 40   | 35   | 33   | 34   | 36   | 38   |
|                     | R | 10   | 6    | 10   | 8    | 13   | 12   | 9    | 7    | 10   | 7    |

<sup>1</sup> All data reported in this table are from saltwater fishing activities.<sup>2</sup> Alaska effort is measured in 'Days Fished,' not in 'Angler Trips.' Numbers before 2011 use estimates of the portion of days fished devoted to shellfish, which were excluded.<sup>3</sup> Information reported in this table is from the Sport Fish Division of the Alaska Department of Fish and Game (ADF&G) for saltwater fishing activities.<sup>4</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>5</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

**2017 Alaska State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 56,796 (0.2%)       | 21,279 (0.3%)   | 262,075 (0.2%) | 15.0 (0.2%)                  | 26.8 (0.3%)                         | 54.4                              | ds  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)**

|                       |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product       | Firms    | 32    | 28    | 26    | 25    | 35    | 31    | 30    | 22    | 20    |
| prep. & packaging     | Receipts | 1,693 | 2,482 | 2,882 | 2,708 | 3,268 | 2,472 | 4,091 | 1,743 | 1,792 |
| Seafood sales, retail | Firms    | 16    | 23    | 15    | 15    | 11    | 17    | 11    | 13    | 20    |
|                       | Receipts | 1,350 | 1,595 | 903   | 1,626 | 1,458 | 1,539 | 761   | 1,483 | 1,384 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1</sup>**

|                          |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--------------------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Seafood product          | Establishments | 121     | 119     | 122     | 116     | 115     | 108     | 109     | 104     | 94      |
| prep. & packaging        | Employees      | 7,572   | 8,074   | 8,578   | 8,289   | 8,638   | 9,115   | 8,472   | 8,654   | 8,553   |
|                          | Payroll        | 255,403 | 268,208 | 296,851 | 297,284 | 308,961 | 337,171 | 356,855 | 355,129 | 347,495 |
| Seafood sales, wholesale | Establishments | 54      | 52      | 48      | 47      | 43      | 43      | 37      | 33      | 36      |
|                          | Employees      | ds      | ds      | 159     | 143     | 102     | 120     | 94      | 79      | 277     |
|                          | Payroll        | 8,445   | 9,141   | 9,985   | 10,943  | 7,205   | 7,024   | 7,306   | 6,037   | 22,658  |
| Seafood sales, retail    | Establishments | 10      | 10      | 10      | 15      | 14      | 14      | 15      | 16      | 14      |
|                          | Employees      | 44      | ds      | ds      | ds      | ds      | ds      | 64      | 77      | 53      |
|                          | Payroll        | 1,824   | 1,986   | 2,487   | 2,019   | 2,337   | 2,687   | 2,498   | 2,549   | 1,798   |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1</sup>**

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 21     | 22     | 23     | 23     | 20     | 27     | 23     | 23     | 17     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | 335    | 344    | 394    | 327    |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | 15,845 | 17,748 | 18,762 | 14,505 |
| Deep Sea Freight Transportation                | Establishments | 3      | 3      | 1      | 2      | 3      | 6      | 5      | 5      | 4      |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
| Deep Sea Passenger Transportation              | Establishments | 1      | NA     | 1      | 1      | 2      | 1      | 1      | 1      | 3      |
|  | Employees      | ds     | NA     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | ds     | NA     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
| Coastal and Great Lakes Freight Transportation | Establishments | 50     | 55     | 63     | 47     | 53     | 72     | 74     | 79     | 90     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 1,067  | 966    | 981    |
|  | Payroll        | 33,132 | ds     | ds     | ds     | 82,692 | 89,020 | 89,281 | 86,849 | 86,178 |
| Port and Harbor Operations                     | Establishments | 8      | 9      | 8      | 18     | 13     | 12     | 11     | 11     | 9      |
|  | Employees      | ds     | ds     | ds     | 582    | ds     | ds     | ds     | 14     | 0      |
|  | Payroll        | ds     | ds     | 1,790  | 25,545 | ds     | ds     | ds     | 904    | 0      |
| Marine Cargo Handling                          | Establishments | 13     | 13     | 14     | 8      | 9      | 9      | 9      | 8      | 7      |
|  | Employees      | ds     | ds     | ds     | 334    | ds     | ds     | 437    | 410    | 436    |
|  | Payroll        | ds     | ds     | ds     | 26,481 | ds     | ds     | 32,326 | 32,171 | 31,439 |
| Navigational Services to Shipping              | Establishments | 23     | 25     | 22     | 21     | 22     | 25     | 24     | 23     | 28     |
|  | Employees      | 312    | 303    | 321    | 97     | 103    | 138    | 140    | 126    | 168    |
|  | Payroll        | 25,630 | 27,543 | 27,156 | 9,938  | 10,805 | 13,015 | 13,596 | 14,221 | 17,063 |
| Marinas  | Establishments | 13     | 14     | 14     | 13     | 12     | 11     | 11     | 10     | 9      |
|  | Employees      | 56     | ds     | ds     | ds     | ds     | ds     | 30     | 33     | 43     |
|  | Payroll        | 2,181  | 1,932  | 2,053  | 1,613  | 1,449  | ds     | 1,423  | 1,568  | 1,818  |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.



# Pacific Region

- California
- Oregon
- Washington



A view of Newport, Oregon, home of the two largest fishing communities in Oregon.  
Photo: Pacific Fishery Management Council/Jennifer Gilden



## MANAGEMENT CONTEXT

The Pacific Region includes California, Oregon, and Washington. Federal fisheries in this region are managed by the Pacific Fishery Management Council (PFMC) and NOAA Fisheries under four fishery management plans (FMPs).

### Pacific Region FMPs

- Coastal pelagic species
- Pacific coast groundfish
- Pacific coast salmon
- West Coast highly migratory species

Six of the stocks or stock complexes covered in these FMPs were listed as overfished in 2018: Chinook salmon (Sacramento River fall stock and Klamath River fall stock, both newly added to the list in 2018); coho salmon (Queets stock, Juan de Fuca stock, and Snohomish stock, all of which were newly added to the list in 2018); and Pacific bluefin tuna (Pacific stock). Four stocks/complexes were subject to overfishing in 2018: Chinook salmon (Upper Columbia River summer stock, newly added to the overfishing list in 2018); Pacific bluefin tuna (Pacific stock); swordfish (Eastern Pacific stock); and yellowfin tuna (Eastern Pacific stock; newly added to the overfishing list in 2018). Coho salmon (Puget Sound: Stillaguamish stock) was removed from the overfishing list in 2018.

Conservative management techniques are employed in the Pacific Region's fisheries. For example, groundfish and salmon fisheries are subject to "weak stock management" where access to the surplus of healthier stocks that can be harvested is often restricted to protect weaker stocks with which they commingle in the ocean. These weaker stocks have included 10 groundfish stocks that have been managed under rebuilding plans, salmon (listed under the Endangered Species Act), and other non-listed stocks that constrain the fishery. Currently, nine of the 10 groundfish stocks have been successfully rebuilt since the stocks were declared overfished or depleted in 1999;<sup>1</sup> only the yelloweye rockfish stock is currently managed under a rebuilding plan.<sup>2</sup>

Salmon management is further complicated by the need to ensure equal allocation of harvest among diverse user groups and coordination with other entities that have

jurisdiction over various aspects of salmon management. Decades of habitat modification, hatchery practices, harvest and growing competition for water have affected the viability of salmon stocks and made them more vulnerable to adverse environmental conditions. These conditions include the prolonged drought and adverse ocean conditions experienced in recent years. Low returns of salmon to the Klamath River in 2006 and to the Sacramento River in 2008 and 2009, resulted in unprecedented closures of ocean and in-river fisheries, leading to federal disaster relief for affected entities.

Coastal pelagic species (CPS) are highly variable, environmentally sensitive stocks that provide food for marine mammals, birds, and fish. These species include Pacific sardine, northern anchovy, Pacific and jack mackerel, and market squid. Of these species, Pacific sardine is the most commonly targeted CPS finfish and is managed according to an innovative harvest control rule: Allowable harvest varies with sea surface temperature. Because the geographic range of sardine tends to expand with abundance, harvest allocation between the California and Pacific Northwest fisheries is an ongoing and dynamic issue. The annual guideline for sardine harvest is allocated coast-wide on a seasonal basis. Recent decreases in harvest guideline limits have contributed to the development of an intense derby fishery.

Catch limits for Pacific halibut, a transboundary fish stock, are set in January by the International Pacific Halibut Commission (IPHC). This bilateral commission between the United States and Canada determines total allowable catch levels (TACs) for Pacific halibut that will be caught in the United States and Canadian exclusive economic zones (EEZs). After catch levels are determined, the PFMC develops a catch-sharing plan for tribal and non-tribal (i.e., commercial and recreational) fisheries in the federal waters of California, Oregon, and Washington. Pacific halibut is targeted only with hook gear, but there are allocations to the trawl sector for bycatch, including individual bycatch quotas, in the Pacific groundfish trawl IFQ.

The Highly Migratory Species (HMS) FMP includes tunas, billfish, and pelagic sharks as managed species. The albacore surface hook-and-line fishery is by far the most economically important commercial HMS fishery, followed

<sup>1</sup> Pacific Fishery Management Council. 2021. Council news: Rigorous management practices have led to successful rebuilding of several West Coast groundfish stocks. [Available at <https://www.pcouncil.org/council-news-rigorous-management-practices-have-led-to-successful-rebuilding-of-several-west-coast-groundfish-stocks/> (accessed September 29, 2021).]

<sup>2</sup> Pacific Fishery Management Council. 2021. Fact Sheet: Overfishing and Rebuilding. [Available at <https://www.pcouncil.org/fact-sheet-overfishing-and-rebuilding/>, accessed September 29, 2021.]

by the drift gillnet fishery for swordfish and thresher shark. This fishery is also a very important component of the catch for the Pacific Region's commercial passenger fishing vessel fleet and the private recreational boat fleet.

## Catch Share Programs

The Pacific Region has two catch share programs: 1) the Pacific Coast Sablefish Permit Stacking Program; and 2) the Pacific Groundfish Trawl Rationalization Program (whiting and non-whiting trawl). The landings revenues for these programs totaled \$76 million (in inflation-adjusted 2018 dollars) in 2017. The following are descriptions of these catch share programs and their performance.

### Pacific Coast Sablefish Permit Stacking Program:

This program was implemented in 2001 and allows vessels to stack multiple vessel permits on a single vessel. The goal of this approach is to improve economic efficiency through rationalization of the fixed gear fleet, increase benefits for fishing communities, promote equity, lessen reallocation effects of previous harvest regulations, promote safety, and improve product quality and value. The 2017 key performance indicators of the program show that relative to the baseline period, landings and the number of active vessels decreased, while inflation-adjusted landings revenue and inflation-adjusted revenue per active vessel increased. There was no catch quota prior to the implementation of the catch share program so program performance could not be evaluated for this metric.

A recent study of this fleet demonstrated that after the catch share program was implemented, the probability of fishermen taking a fishing trip in high wind conditions decreased 82%. This provides evidence that institutional changes can significantly reduce risk taking behavior and result in safer fisheries.

### Pacific Groundfish Trawl Rationalization Program

**(whiting and non-whiting trawl):** This program was implemented by the PFMCI in January 2011. This program involves individual fishing quotas (IFQs) for non-whiting groundfish and whiting trawlers delivering to shoreside plants and cooperatives for whiting mothership and catcher processor sectors. The objectives of this program are to provide a mechanism for total catch accounting; provide a viable, profitable, and efficient groundfish fish-

ery; promote practices that reduce bycatch and discard mortality and minimize ecological impacts; increase operational flexibility; minimize adverse effects from the IFQ program on fishing communities and other fisheries; promote measurable economic and employment benefits through the seafood catching, processing, distribution, and support sectors of the industry; provide quality product for the consumer; and increase safety in the fishery.

The 2017 key performance indicators of the program show that relative to the baseline period the number of active vessels decreased, while landings, inflation-adjusted landings revenue, and inflation-adjusted revenue per active vessel increased. There was no catch quota prior to the implementation of the catch share program so program performance could not be evaluated for this metric.

Expanded observer coverage and dockside monitoring, which were implemented with the catch share program, coupled with long-term adherence to catch targets and improved stock assessment models, have to varying degrees also contributed to improved fishery performance. For example, in the first three years of catch shares, the total catch of rebuilding stocks (of which two — canary rockfish and petrale sole — are now declared rebuilt) was 50% lower than in the previous three years.

## COMMERCIAL FISHERIES — PACIFIC REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

### Key Pacific Region Commercial Species

- Albacore tuna
- Crab
- Flatfish
- Other shellfish
- Pacific hake (whiting)
- Rockfish
- Sablefish
- Salmon
- Shrimp
- Squid

## Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>3</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>4</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry in California generated the largest employment impacts

in the Pacific region with 146,728 full- and part-time jobs. California also generated the largest sales impacts (\$29.1 billion), value-added impacts (\$10.3 billion), and income impacts (\$6.1 billion).

## Landings Revenue

In 2018, landings revenue in the Pacific Region totaled \$635.6 million, a 50% increase from 2009 (a 29% increase in real terms after adjusting for inflation) and a 2% decrease from 2017. Landings revenue was highest in Washington (\$249.5 million), followed by California (\$182.7 million).

Shellfish landings revenue accounted for 66% of all landings revenue. In 2018, crab (\$238.5 million), other shellfish (\$91.2 million), and shrimp (\$49.1 million) had the highest landings revenue in this region. Together, these top three species accounted for 60% of total landings revenue.

From 2009 to 2018, Pacific hake (whiting) (247%, 199% in real terms), shrimp (198%, 156% in real terms), and rockfish (174%, 136% in real terms) had the largest increases, while squid (-32%, -41% in real terms), sablefish (-27%, -37% in real terms), and albacore tuna (-10%, -22% in real terms) had the largest decreases. From 2017 to 2018, shrimp (65%), rockfish (24%), and crab (14%) had the largest increases, while squid (-43%), albacore tuna (-28%), and sablefish (-26%) had the largest decreases.

<sup>3</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

<sup>4</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

**Commercial Revenue: Largest Increases***From 2009:*

- Pacific hake (whiting) (247%, 199% in real terms)
- Shrimp (198%, 156% in real terms)
- Rockfish (174%, 136% in real terms)

*From 2017:*

- Shrimp (65%)
- Rockfish (24%)
- Crab (14%)

**Commercial Revenue: Largest Decreases***From 2009:*

- Squid (-32%, -41% in real terms)
- Sablefish (-27%, -37% in real terms)
- Albacore tuna (-10%, -22% in real terms)

*From 2017:*

- Squid (-43%)
- Albacore tuna (-28%)
- Sablefish (-26%)

**Commercial Landings: Largest Increases***From 2009:*

- Rockfish (638%)
- Pacific hake (whiting) (159%)
- Shrimp (56%)

*From 2017:*

- Shrimp (46%)
- Rockfish (45%)
- Other shellfish (14%)

**Commercial Landings: Largest Decreases***From 2009:*

- Squid (-61%)
- Albacore tuna (-44%)
- Salmon (-42%)

*From 2017:*

- Squid (-42%)
- Pacific hake (whiting) (-25%)
- Flatfish (-17%)

**Landings**

In 2018, commercial fisheries landings in the Pacific Region totaled 977 million pounds. This represents a 14% increase from 2009 and a 17% decrease from 2017. Pacific hake (whiting) contributed the highest landings volume in the region, accounting for 60% of total landing weight.

From 2009 to 2018, rockfish (638%), Pacific hake (whiting) (159%), and shrimp (56%) had the largest increases, while squid (-61%), albacore tuna (-44%), and salmon (-42%) had the largest decreases. From 2017 to 2018, shrimp (46%), rockfish (45%), and other shellfish (14%) had the largest increases, while squid (-42%), Pacific hake (whiting) (-25%), and flatfish (-17%) had the largest decreases.

**Prices**

In 2018, other shellfish (\$22 per pound) received the highest ex-vessel price in the region. Landings of Pacific hake (whiting) (\$0.08 per pound) had the lowest ex-vessel price. From 2009 to 2018, salmon (211%, 168% in real terms), flatfish (99%, 71% in real terms), and shrimp (91%, 65% in real terms) had the largest increases, while rockfish (-63%, -68% in real terms) and sablefish (-1%, -15% in real terms) had the largest decreases. From 2017 to 2018, salmon (23%), shrimp (13%), and flatfish (8%) had the largest increases, while albacore tuna (-23%), sablefish (-22%), and rockfish (-15%) had the largest decreases.

**RECREATIONAL FISHERIES — PACIFIC REGION**

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>5</sup>

<sup>5</sup> Pacific recreational catch and effort estimates are based on multiple data sources. See data sources section.

**Key Pacific Region Recreational Species<sup>6,7</sup>**

- Black rockfish
- Bocaccio
- Cabezon
- Canary rockfish
- Lingcod
- Mackerels
- Pacific halibut
- Salmon
- Surfperches
- Tunas

**Economic Impacts and Expenditures**

The economic contribution of recreational fishing activities in the Pacific Region is based on spending by recreational anglers.<sup>8</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>9</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to

estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

The greatest employment impacts from expenditures on saltwater recreational fishing in the Pacific Region were generated in California (21,145 jobs), followed by Washington (5,450 jobs) and Oregon (2,903 jobs). The largest sales impacts were observed in California (\$2.8 billion), followed by Washington (\$691.8 million) and Oregon (\$306.3 million). The biggest income impacts were generated in California (\$961.4 million), followed by Washington (\$268.1 million) and Oregon (\$133.6 million). The greatest value-added impacts were in California (\$1.5 billion), followed by Washington (\$443.8 million) and Oregon (\$202.2 million).

Expenditures for fishing trips and durable equipment across the Pacific Region in 2018 totaled \$2.6 billion. This total included \$2 billion in durable goods expenditures, with the largest portion coming from boat expenses (\$964.5 million).

**Participation**

In 2018, there were 1.2 million recreational anglers who fished in the Pacific Region. This number represented a 25% decrease from 2009 and a 12% decrease from 2017. The anglers are categorized as either residents from coastal (71%) or non-coastal (29%) counties.

**Fishing Trips**

In 2018, recreational fishermen took 4.2 million fishing trips in the Pacific Region. Oregon and Washington trip estimates are not available for the shore mode. This

<sup>6</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>7</sup> Mackerels: bullet mackerel, chub mackerel, frigate mackerel, mackerel family, and Pacific (chub) mackerel. Salmon: Chinook salmon, chum salmon, coho salmon, pink salmon, and sockeye salmon. Surfperches: barred surfperch, black perch, calico surfperch, dwarf perch, kelp perch, pile perch, pink seaperch, rainbow seaperch, redbait surfperch, rubberlip seaperch, sharpnose seaperch, shiner perch, silver surfperch, spotfin surfperch, striped seaperch, surfperch family, walleye surfperch, and white seaperch.

<sup>8</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>9</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]



number represented a 29% decrease from 2009 and a 13% decrease from 2017. The largest proportions of trips were taken in the shore mode (54%) and private boat (27%). States with the highest number of recorded trips in the Pacific Region were California (3.4 million trips) and Washington (558,129 trips).

## Harvest and Release Trends<sup>10,11</sup>

Of the Pacific Region's key species and species groups, mackerels (1.8 million fish), black rockfish (687,254 fish), and lingcod (352,224 fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, bocaccio (234%) and canary rockfish (160%) had the largest increases, while surfperches (-84%), salmon (-66%), and Pacific halibut (-23%) had the largest decreases. From 2017 to 2018, bocaccio (14%) and tunas (12%) had the largest increases, while surfperches (-89%), canary rockfish (-23%), and cabezon (-14%) had the largest decreases.

### Harvest and Release: Largest Increases

*From 2009:*

- Bocaccio (234%)
- Canary rockfish (160%)

*From 2017:*

- Bocaccio (14%)
- Tunas (12%)

### Harvest and Release: Largest Decreases

*From 2009:*

- Surfperches (-84%)
- Salmon (-66%)
- Pacific halibut (-23%)

*From 2017:*

- Surfperches (-89%)
- Canary rockfish (-23%)
- Cabezon (-14%)

## MARINE ECONOMY — PACIFIC REGION

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>12</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quo-

<sup>10</sup> In the California tables, the following species are included in the species groups (if not listed, species groups are the same as for the entire Pacific Region as listed above): Barracuda, bass and bonito include grouper genus (*epinephelus*), sandbass genus, kelp bass, spotted sandbass, barred sandbass, giant seabass, Pacific barracuda, and threadfin bass. California and other scorpionfish include scorpionfish family and California scorpionfish. California halibut and other flatfishes include flatfish order, unidentified flounder or sole, lefteye flounder family, sanddab genus, whiff genus, Pacific sanddab, speckled sanddab, longfin sanddab, California halibut, bigmouth sole, fantail sole, righteye flounder family, arrowtooth flounder, deepsea sole, petrale sole, flathead sole, butter sole, rock sole, dover sole, english sole, starry flounder, c-o sole, curlfin sole, spotted turbot, sand sole, Pacific halibut, and diamond turbot. Rockfishes include scorpionfish family, rockfish genus, rockfish species, Pacific ocean perch, brown rockfish, redbanded rockfish, silvergray rockfish, copper rockfish, darkblotched rockfish, greenstriped rockfish, widow rockfish, yellowtail rockfish, chilipepper, rosethorn rockfish, quillback rockfish, black rockfish, vermilion rockfish, blue rockfish, china rockfish, tiger rockfish, bocaccio, canary rockfish, redstripe rockfish, yellowmouth rockfish, rosy rockfish, yelloweye rockfish, stripetail rockfish, black and yellow rockfish, kelp rockfish, greenspotted rockfish, starry rockfish, calico rockfish, bronzespotted rockfish, squarespot rockfish, cowcod, mexican rockfish, speckled rockfish, grass rockfish, flag rockfish, bank rockfish, halfbanded rockfish, olive rockfish, treefish, honeycomb rockfish, gopher rockfish, swordspine rockfish, freckled rockfish, pinkrose rockfish, greenblotched rockfish, shortspine thornyhead, deacon rockfish, and deacon/blue rockfish unknown.

<sup>11</sup> In the Oregon and Washington tables, the following species are included in the species groups: Greenlings (excluding lingcod) include greenling family, greenling genus, kelp greenling, rock greenling, longspine combfish, shortspine combfish, and painted greenling. Other flatfishes include flatfish order, unidentified flounder or sole, lefteye flounder family, sanddab genus, whiff genus, Pacific sanddab, speckled sanddab, longfin sanddab, California halibut, bigmouth sole, fantail sole, righteye flounder family, arrowtooth flounder, deepsea sole, petrale sole, flathead sole, butter sole, rock sole, dover sole, english sole, starry flounder, c-o sole, curlfin sole, spotted turbot, sand sole, and diamond turbot. Other rockfish include scorpionfish family, rockfish genus, rockfish species, Pacific ocean perch, brown rockfish, redbanded rockfish, silvergray rockfish, copper rockfish, darkblotched rockfish, greenstriped rockfish, widow rockfish, yellowtail rockfish, chilipepper, rosethorn rockfish, quillback rockfish, vermilion rockfish, blue rockfish, china rockfish, tiger rockfish, bocaccio, canary rockfish, redstripe rockfish, yellowmouth rockfish, rosy rockfish, yelloweye rockfish, stripetail rockfish, black and yellow rockfish, kelp rockfish, greenspotted rockfish, starry rockfish, calico rockfish, bronzespotted rockfish, squarespot rockfish, cowcod, mexican rockfish, speckled rockfish, grass rockfish, flag rockfish, bank rockfish, halfbanded rockfish, olive rockfish, treefish, honeycomb rockfish, gopher rockfish, swordspine rockfish, freckled rockfish, pinkrose rockfish, greenblotched rockfish, shortspine thornyhead, deacon rockfish, and deacon/blue rockfish unknown.

<sup>12</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

tient (CFLQ).<sup>13</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

The Bureau of Labor Statistics suppressed the CFLQ value for Oregon and Washington for 2017. Of the remaining states, California had a CFLQ value of 0.56.

In 2017, 1.2 million employer establishments operated throughout the entire Pacific Region (including marine and non-marine related establishments). These establishments employed 19.3 million workers and had a total annual payroll of \$1.2 trillion. The combined gross state product of California, Oregon, and Washington was approximately \$3.6 trillion in 2017.<sup>14</sup>

## Seafood Sales and Processing

**Seafood Product Preparation and Packaging:** In 2017, the Pacific Region had 262 non-employer firms in the seafood product preparation and packaging sector (a 19% increase from 2009). Annual receipts for these firms totaled \$17.4 million. There were 130 employer firms in this sector (a 15% decrease from 2009). These establishments employed 7,949 workers (a 1% increase from 2009) and had a total annual payroll of \$460.3 million. The greatest number of combined employer and non-employer establishments in this sector was in California (241), followed by Washington (121), and Oregon (30).

**Seafood Sales, Retail:** In 2017, there were 277 non-employer firms in seafood retail sales in the Pacific Region (an 8% increase from 2009). Annual receipts for these firms totaled \$21.5 million. There were 208 employer firms in the seafood retail sector (a 5% decrease from 2009). These establishments employed 1,358 workers (a 1% decrease from 2009) and had a total annual payroll of \$37.6 million. The greatest number of employer and non-employer establishments in this sector was in California (383), followed by Washington (69), and Oregon (33).

**Seafood Sales, Wholesale:** There were 449 employer firms in the seafood wholesale sector in the Pacific Region in 2017 (an 8% increase from 2009). These establishments employed 5,707 workers and had a total annual payroll of \$290 million.<sup>15</sup> The greatest number of employer and non-employer establishments in this sector was in California (320), followed by Washington (109) and Oregon (20).

## Transportation Support and Marine Operations

Data for the transportation support and marine operations sectors of the Pacific Region's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the ship and boat building sector in the Pacific Region accounted for \$936.5 million in payroll.

<sup>13</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>14</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

<sup>15</sup> The Census Bureau suppressed number of employees and payroll data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.

# Tables | Pacific Region



## Pacific Region | Commercial Fisheries

2018 Economic Impacts of the Pacific Seafood Industry (jobs, millions of dollars)<sup>1</sup>

|            | Landings Revenue | With Imports |        |        |             | Without Imports |       |        |             |
|------------|------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|            |                  | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| California | 183              | 146,728      | 29,081 | 6,136  | 10,260      | 8,856           | 771   | 287    | 396         |
| Oregon     | 172              | 16,411       | 1,336  | 457    | 645         | 14,257          | 872   | 362    | 485         |
| Washington | 249              | 55,280       | 8,333  | 2,153  | 3,317       | 16,614          | 1,284 | 526    | 716         |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                        | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total                  | 423,509 | 496,799 | 640,192 | 607,337 | 734,271 | 679,723 | 487,695 | 632,150 | 645,498 | 635,622 |
| Finfish                | 153,228 | 186,194 | 245,212 | 231,232 | 262,507 | 248,508 | 183,074 | 207,335 | 232,890 | 203,315 |
| Shellfish              | 257,386 | 296,901 | 375,766 | 355,920 | 450,986 | 413,133 | 287,101 | 408,698 | 396,559 | 417,664 |
| Other                  | 12,894  | 13,704  | 19,213  | 20,186  | 20,778  | 18,082  | 17,521  | 16,116  | 16,050  | 14,642  |
| <b>Key Species</b>     |         |         |         |         |         |         |         |         |         |         |
| Albacore tuna          | 27,616  | 28,778  | 43,347  | 45,851  | 41,930  | 32,792  | 29,374  | 37,657  | 34,812  | 24,929  |
| Crab                   | 123,740 | 134,211 | 182,318 | 177,866 | 250,431 | 199,104 | 105,290 | 230,185 | 209,323 | 238,516 |
| Flatfish               | 18,365  | 14,955  | 16,921  | 17,438  | 20,782  | 19,422  | 20,626  | 22,600  | 24,464  | 21,862  |
| Other shellfish        | 60,209  | 71,229  | 86,643  | 74,060  | 84,630  | 80,289  | 70,065  | 90,166  | 88,841  | 91,185  |
| Pacific hake (whiting) | 13,925  | 25,454  | 56,739  | 48,635  | 64,877  | 64,111  | 25,206  | 46,843  | 60,438  | 48,307  |
| Rockfish               | 4,630   | 4,585   | 5,230   | 5,714   | 5,552   | 5,950   | 7,058   | 5,647   | 10,247  | 12,682  |
| Sablefish              | 34,371  | 35,879  | 44,851  | 28,334  | 19,423  | 24,489  | 28,680  | 31,632  | 34,011  | 25,164  |
| Salmon                 | 25,436  | 50,421  | 53,573  | 47,865  | 76,760  | 70,590  | 47,226  | 40,135  | 42,307  | 45,722  |
| Shrimp                 | 16,511  | 20,293  | 40,285  | 40,073  | 42,193  | 60,825  | 87,280  | 48,083  | 29,691  | 49,122  |
| Squid                  | 56,926  | 71,169  | 66,520  | 63,922  | 73,732  | 72,915  | 24,466  | 40,264  | 68,704  | 38,841  |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                        | 2009    | 2010      | 2011      | 2012      | 2013      | 2014      | 2015    | 2016    | 2017      | 2018    |
|------------------------|---------|-----------|-----------|-----------|-----------|-----------|---------|---------|-----------|---------|
| Total                  | 859,630 | 1,006,120 | 1,156,386 | 1,070,785 | 1,254,660 | 1,204,470 | 746,241 | 933,213 | 1,178,478 | 976,724 |
| Finfish                | 540,206 | 592,264   | 732,979   | 712,911   | 839,561   | 806,851   | 518,398 | 710,747 | 930,293   | 763,131 |
| Shellfish              | 302,012 | 396,658   | 404,903   | 338,453   | 393,021   | 379,030   | 212,794 | 210,592 | 237,924   | 204,689 |
| Other                  | 17,413  | 17,198    | 18,503    | 19,422    | 22,078    | 18,589    | 15,049  | 11,873  | 10,261    | 8,904   |
| <b>Key Species</b>     |         |           |           |           |           |           |         |         |           |         |
| Albacore tuna          | 27,163  | 25,520    | 24,358    | 30,722    | 28,511    | 27,315    | 24,899  | 23,009  | 16,452    | 15,323  |
| Crab                   | 59,157  | 62,228    | 66,682    | 53,280    | 87,594    | 52,177    | 22,795  | 66,568  | 60,717    | 67,923  |
| Flatfish               | 42,501  | 35,066    | 27,395    | 26,882    | 30,538    | 25,692    | 26,435  | 28,581  | 30,711    | 25,426  |
| Other shellfish        | 3,635   | 3,316     | 3,462     | 3,126     | 3,451     | 3,748     | 3,554   | 3,967   | 3,637     | 4,145   |
| Pacific hake (whiting) | 226,167 | 308,885   | 508,267   | 352,393   | 514,495   | 581,576   | 339,488 | 577,353 | 778,901   | 586,773 |
| Rockfish               | 4,977   | 5,561     | 5,957     | 6,813     | 6,511     | 7,247     | 9,044   | 7,617   | 25,309    | 36,748  |
| Sablefish              | 15,882  | 15,080    | 14,169    | 11,696    | 9,147     | 9,792     | 11,420  | 11,971  | 12,442    | 11,787  |
| Salmon                 | 34,394  | 32,228    | 42,223    | 24,709    | 57,208    | 37,034    | 25,980  | 18,902  | 22,597    | 19,868  |
| Shrimp                 | 33,560  | 42,311    | 66,739    | 66,406    | 71,451    | 93,380    | 105,088 | 55,257  | 35,776    | 52,269  |
| Squid                  | 205,659 | 288,803   | 268,020   | 215,641   | 230,525   | 229,724   | 81,358  | 84,800  | 137,793   | 80,352  |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                        | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Albacore tuna          | 1.02  | 1.13  | 1.78  | 1.49  | 1.47  | 1.20  | 1.18  | 1.64  | 2.12  | 1.63  |
| Crab                   | 2.09  | 2.16  | 2.73  | 3.34  | 2.86  | 3.82  | 4.62  | 3.46  | 3.45  | 3.51  |
| Flatfish               | 0.43  | 0.43  | 0.62  | 0.65  | 0.68  | 0.76  | 0.78  | 0.79  | 0.80  | 0.86  |
| Other shellfish        | 16.56 | 21.48 | 25.03 | 23.69 | 24.52 | 21.42 | 19.72 | 22.73 | 24.42 | 22.00 |
| Pacific hake (whiting) | 0.06  | 0.08  | 0.11  | 0.14  | 0.13  | 0.11  | 0.07  | 0.08  | 0.08  | 0.08  |
| Rockfish               | 0.93  | 0.82  | 0.88  | 0.84  | 0.85  | 0.82  | 0.78  | 0.74  | 0.40  | 0.35  |
| Sablefish              | 2.16  | 2.38  | 3.17  | 2.42  | 2.12  | 2.50  | 2.51  | 2.64  | 2.73  | 2.13  |
| Salmon                 | 0.74  | 1.56  | 1.27  | 1.94  | 1.34  | 1.91  | 1.82  | 2.12  | 1.87  | 2.30  |
| Shrimp                 | 0.49  | 0.48  | 0.60  | 0.60  | 0.59  | 0.65  | 0.83  | 0.87  | 0.83  | 0.94  |
| Squid                  | 0.28  | 0.25  | 0.25  | 0.30  | 0.32  | 0.32  | 0.30  | 0.47  | 0.50  | 0.48  |

<sup>1</sup> The Pacific Region includes landings by Pacific at-sea processors. However, revenue from these landings are not included in the state tables.

**2018 Economic Impacts of the Pacific Recreational Fishing Expenditures (thousands of dollars, trips)**

|            | <b>Trips</b> | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|------------|--------------|--------------|--------------|---------------|--------------------|
| California | 3,405        | 21,145       | 2,781,129    | 961,391       | 1,543,312          |
| Oregon     | 210          | 2,903        | 306,275      | 133,623       | 202,226            |
| Washington | 558          | 5,450        | 691,840      | 268,102       | 443,804            |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 275,409                  | Fishing Tackle             | 472,540                           |
| Private Boat                                    | 229,362                  | Other Equipment            | 238,675                           |
| Shore   | 178,560                  | Boat Expenses              | 964,476                           |
| Total   | 683,331                  | Vehicle Expenses           | 271,552                           |
|   |                          | Second Home Expenses       | 4,652                             |
|   |                          | Total Durable Expenditures | 1,951,896                         |
| Total State Trip and Durable Goods Expenditures |                          |                            | 2,635,227                         |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal       | 1,203       | 1,297       | 1,193       | 1,056       | 1,382       | 1,307       | 1,236       | 849         | 966         | 827         |
| Non-Coastal   | 336         | 371         | 382         | 346         | 384         | 429         | 426         | 332         | 350         | 330         |
| Total Anglers | 1,539       | 1,668       | 1,575       | 1,402       | 1,766       | 1,736       | 1,662       | 1,181       | 1,316       | 1,157       |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 436         | 451         | 675         | 683         | 747         | 1,079       | 874         | 753         | 779         | 774         |
| Private     | 1,848       | 1,460       | 1,566       | 1,705       | 1,803       | 1,724       | 1,609       | 1,075       | 1,672       | 1,135       |
| Shore       | 3,599       | 3,024       | 3,045       | 4,227       | 4,113       | 3,606       | 2,385       | 2,377       | 2,373       | 2,264       |
| Total Trips | 5,883       | 4,936       | 5,286       | 6,615       | 6,663       | 6,409       | 4,869       | 4,205       | 4,824       | 4,173       |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2,3</sup>**

|                  |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Black rockfish   | H | 702         | 658         | 597         | 721         | 1,039       | 1,005       | 972         | 893         | 697         | 578         |
|                  | R | 85          | 75          | 66          | 65          | 114         | 115         | 132         | 105         | 142         | 110         |
| Bocaccio         | H | 47          | 63          | 166         | 211         | 188         | 188         | 137         | 82          | 141         | 159         |
|                  | R | < 1         | 1           | < 1         | 2           | 13          | 7           | 1           | 2           | < 1         | 2           |
| Cabezon          | H | 28          | 26          | 32          | 33          | 28          | 33          | 35          | 34          | 28          | 21          |
|                  | R | 17          | 18          | 22          | 33          | 33          | 23          | 19          | 20          | 22          | 22          |
| Canary rock-fish | H | 35          | 32          | 52          | 50          | 44          | 57          | 68          | 58          | 144         | 121         |
|                  | R | 18          | 22          | 32          | 36          | 56          | 59          | 87          | 68          | 36          | 18          |
| Lingcod          | H | 79          | 86          | 157         | 194         | 256         | 290         | 354         | 330         | 288         | 243         |
|                  | R | 84          | 114         | 183         | 201         | 187         | 182         | 176         | 191         | 130         | 110         |
| Mackerels        | H | 1,357       | 1,177       | 1,111       | 836         | 583         | 1,018       | 1,685       | 1,008       | 1,420       | 1,189       |
|                  | R | 664         | 581         | 532         | 409         | 333         | 728         | 533         | 592         | 773         | 636         |
| Pacific halibut  | H | 23          | 18          | 19          | 21          | 23          | 23          | 20          | 21          | 22          | 21          |
|                  | R | 10          | 4           | 4           | 5           | 5           | 5           | 5           | 5           | 4           | 4           |
| Salmon           | H | 503         | 212         | 248         | 328         | 368         | 657         | 360         | 135         | 239         | 180         |
|                  | R | 323         | 110         | 151         | 119         | 150         | 194         | 115         | 50          | 77          | 101         |
| Surfperches      | H | 537         | 470         | 824         | 1,027       | 809         | 993         | 1,226       | 821         | 875         | 89          |
|                  | R | 510         | 223         | 714         | 984         | 819         | 1,002       | 912         | 521         | 702         | 80          |
| Tunas            | H | 71          | 75          | 46          | 118         | 79          | 123         | 115         | 85          | 57          | 64          |
|                  | R | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         |

<sup>1</sup> Oregon trip estimates are not available for the shore mode.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.





# Tables | California



**2018 Economic Impacts of the California Seafood Industry (millions of dollars)<sup>1</sup>**

|                                    | With Imports |        |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 146,728      | 29,081 | 6,136  | 10,260      | 8,856           | 771   | 287    | 396         |
| Commercial Harvesters              | 2,495        | 277    | 93     | 138         | 2,495           | 277   | 93     | 138         |
| Seafood Processors & Dealers       | 4,689        | 564    | 209    | 278         | 1,078           | 130   | 48     | 64          |
| Importers                          | 69,144       | 22,377 | 3,586  | 6,821       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 13,486       | 2,237  | 725    | 1,014       | 353             | 59    | 19     | 27          |
| Retail                             | 56,914       | 3,627  | 1,521  | 2,010       | 4,931           | 305   | 127    | 168         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>2</sup>**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 150,396 | 174,436 | 200,391 | 232,169 | 256,776 | 235,366 | 129,357 | 198,465 | 197,201 | 182,658 |
| Finfish            | 37,176  | 35,812  | 46,312  | 46,111  | 53,942  | 49,892  | 44,645  | 39,789  | 46,866  | 45,648  |
| Shellfish          | 102,981 | 129,293 | 141,824 | 174,224 | 189,642 | 173,345 | 74,838  | 149,211 | 141,327 | 128,842 |
| Other              | 10,239  | 9,331   | 12,255  | 11,835  | 13,191  | 12,129  | 9,874   | 9,465   | 9,008   | 8,167   |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Crab               | 32,370  | 42,864  | 53,638  | 88,095  | 92,705  | 70,448  | 20,324  | 85,286  | 49,209  | 66,108  |
| Pacific sardine    | 5,472   | 4,306   | 4,623   | 4,321   | 1,502   | 2,003   | 343     | 96      | 61      | 77      |
| Rockfish           | 2,733   | 2,560   | 2,624   | 2,541   | 2,688   | 2,718   | 3,173   | 2,426   | 3,267   | 3,659   |
| Sablefish          | 9,765   | 11,491  | 15,122  | 8,990   | 7,064   | 9,425   | 8,909   | 8,791   | 9,303   | 6,715   |
| Salmon             | NA      | 1,215   | 5,095   | 12,887  | 22,947  | 12,126  | 8,115   | 5,213   | 4,792   | 7,678   |
| Sea urchins        | 7,805   | 7,397   | 8,206   | 9,008   | 10,771  | 9,698   | 7,325   | 7,283   | 6,436   | 5,724   |
| Shrimp             | 5,509   | 3,666   | 8,537   | 8,338   | 9,377   | 11,752  | 14,048  | 10,808  | 9,790   | 12,409  |
| Spiny lobster      | 7,890   | 11,333  | 12,911  | 13,698  | 13,629  | 17,982  | 15,740  | 13,594  | 13,177  | 14,143  |
| Squid              | 56,877  | 71,163  | 66,519  | 63,920  | 73,730  | 72,903  | 24,453  | 39,122  | 68,703  | 35,768  |
| Swordfish          | 1,952   | 2,203   | 3,319   | 2,090   | 2,701   | 3,067   | 3,641   | 3,763   | 3,948   | 3,282   |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 374,709 | 434,890 | 405,088 | 354,507 | 365,624 | 361,296 | 187,025 | 167,282 | 212,468 | 179,005 |
| Finfish            | 133,722 | 108,776 | 92,619  | 89,293  | 75,837  | 85,597  | 79,619  | 43,896  | 48,061  | 71,875  |
| Shellfish          | 226,468 | 313,333 | 299,233 | 251,245 | 274,084 | 261,393 | 97,006  | 115,518 | 157,945 | 101,629 |
| Other              | 14,519  | 12,780  | 13,236  | 13,969  | 15,704  | 14,306  | 10,401  | 7,867   | 6,461   | 5,502   |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Crab               | 16,579  | 23,262  | 22,157  | 27,548  | 33,441  | 20,837  | 5,361   | 28,013  | 14,176  | 20,293  |
| Pacific sardine    | 82,843  | 74,228  | 61,098  | 50,803  | 15,594  | 17,133  | 3,751   | 954     | 953     | 720     |
| Rockfish           | 1,748   | 1,750   | 1,478   | 1,472   | 1,547   | 1,421   | 1,408   | 946     | 2,166   | 3,054   |
| Sablefish          | 5,096   | 5,508   | 5,657   | 3,928   | 3,311   | 4,132   | 4,068   | 3,853   | 3,930   | 3,271   |
| Salmon             | NA      | 261     | 1,139   | 2,892   | 4,353   | 2,577   | 1,359   | 707     | 571     | 1,065   |
| Sea urchins        | 12,205  | 11,229  | 11,573  | 12,124  | 13,967  | 12,507  | 8,496   | 5,889   | 4,204   | 3,245   |
| Shrimp             | 3,606   | 623     | 8,223   | 7,208   | 9,527   | 9,920   | 9,524   | 4,818   | 5,210   | 7,082   |
| Spiny lobster      | 706     | 715     | 752     | 877     | 756     | 943     | 768     | 666     | 700     | 872     |
| Squid              | 205,281 | 288,486 | 267,895 | 215,470 | 230,189 | 229,485 | 81,144  | 81,773  | 137,594 | 73,145  |
| Swordfish          | 912     | 816     | 1,344   | 888     | 1,175   | 1,265   | 1,376   | 1,387   | 1,511   | 1,357   |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                 | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Crab            | 1.95  | 1.84  | 2.42  | 3.20  | 2.77  | 3.38  | 3.79  | 3.04  | 3.47  | 3.26  |
| Pacific sardine | 0.07  | 0.06  | 0.08  | 0.09  | 0.10  | 0.12  | 0.09  | 0.10  | 0.06  | 0.11  |
| Rockfish        | 1.56  | 1.46  | 1.77  | 1.73  | 1.74  | 1.91  | 2.25  | 2.56  | 1.51  | 1.20  |
| Sablefish       | 1.92  | 2.09  | 2.67  | 2.29  | 2.13  | 2.28  | 2.19  | 2.28  | 2.37  | 2.05  |
| Salmon          | NA    | 4.66  | 4.47  | 4.46  | 5.27  | 4.71  | 5.97  | 7.37  | 8.39  | 7.21  |
| Sea urchins     | 0.64  | 0.66  | 0.71  | 0.74  | 0.77  | 0.78  | 0.86  | 1.24  | 1.53  | 1.76  |
| Shrimp          | 1.53  | 5.89  | 1.04  | 1.16  | 0.98  | 1.18  | 1.48  | 2.24  | 1.88  | 1.75  |
| Spiny lobster   | 11.18 | 15.84 | 17.17 | 15.62 | 18.02 | 19.06 | 20.49 | 20.40 | 18.84 | 16.22 |
| Squid           | 0.28  | 0.25  | 0.25  | 0.30  | 0.32  | 0.32  | 0.30  | 0.48  | 0.50  | 0.49  |
| Swordfish       | 2.14  | 2.70  | 2.47  | 2.35  | 2.30  | 2.43  | 2.65  | 2.71  | 2.61  | 2.42  |

<sup>1</sup> The Pacific Region includes landings by Pacific at-sea processors. However, revenue from these landings are not included in the state tables.<sup>2</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of California Recreational Fishing Expenditures (thousands of dollars)**

|                                 |              | #Jobs  | Sales     | Income  | Value Added |
|---------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts<br>by Fishing Mode | For-Hire     | 5,470  | 713,718   | 144,853 | 231,733     |
|                                 | Private Boat | 835    | 134,154   | 44,300  | 84,206      |
|                                 | Shore        | 2,053  | 280,042   | 100,148 | 180,923     |
| Total Durable Expenditures      |              | 12,787 | 1,653,216 | 672,090 | 1,046,450   |
| Total State Economic Impacts    |              | 21,145 | 2,781,129 | 961,391 | 1,543,312   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 218,637           | Fishing Tackle             | 353,953                    |
| Private Boat                                    | 89,333            | Other Equipment            | 176,100                    |
| Shore   | 178,560           | Boat Expenses              | 552,122                    |
| Total   | 486,530           | Vehicle Expenses           | 174,068                    |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 1,256,243                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 1,742,773                  |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016 | 2017 | 2018 |
|---------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| Coastal       | 812   | 992   | 863   | 722   | 1,024 | 964   | 893   | 591  | 576  | 551  |
| Non-Coastal   | 177   | 220   | 230   | 190   | 222   | 264   | 263   | 182  | 189  | 174  |
| Out-of-State  | 206   | 221   | 183   | 215   | 87    | 94    | 121   | 96   | 77   | 84   |
| Total Anglers | 1,195 | 1,433 | 1,276 | 1,127 | 1,333 | 1,322 | 1,277 | 869  | 842  | 809  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 308   | 334   | 554   | 557   | 613   | 929   | 727   | 632   | 636   | 644   |
| Private     | 681   | 690   | 683   | 800   | 786   | 785   | 676   | 522   | 533   | 497   |
| Shore       | 3,599 | 3,024 | 3,045 | 4,227 | 4,113 | 3,606 | 2,385 | 2,377 | 2,373 | 2,264 |
| Total Trips | 4,588 | 4,048 | 4,282 | 5,585 | 5,512 | 5,320 | 3,787 | 3,531 | 3,542 | 3,405 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|   |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Barracuda,<br>bass and<br>bonito <sup>4</sup>   | H | 333   | 311   | 423   | 353   | 143   | 218   | 185   | 173   | 156   | 166   |
|   | R | 1,209 | 972   | 744   | 789   | 1,166 | 1,614 | 1,172 | 1,623 | 1,464 | 1,199 |
| Bluefin tuna                                    | H | 5     | 6     | < 1   | 4     | 3     | < 1   | < 1   | < 1   | 11    | 13    |
|   | R | < 1   | < 1   | < 1   | < 1   | < 1   | 0     | < 1   | < 1   | < 1   | < 1   |
| California and<br>other scorpi-<br>onfish       | H | 134   | 133   | 198   | 256   | 241   | 268   | 171   | 150   | 181   | 230   |
|   | R | 119   | 147   | 166   | 217   | 260   | 247   | 190   | 191   | 279   | 359   |
| California hal-<br>ibut and other<br>flatfishes | H | 300   | 351   | 541   | 490   | 640   | 921   | 333   | 289   | 295   | 304   |
|   | R | 199   | 231   | 175   | 248   | 404   | 294   | 193   | 149   | 293   | 210   |
| Lingcod   | H | 39    | 32    | 85    | 108   | 153   | 201   | 256   | 234   | 178   | 131   |
|   | R | 58    | 73    | 129   | 156   | 145   | 155   | 138   | 148   | 99    | 77    |
| Mackerels                                       | H | 1,357 | 1,177 | 1,111 | 835   | 582   | 1,017 | 1,684 | 1,008 | 1,419 | 1,188 |
|   | R | 664   | 581   | 532   | 409   | 332   | 728   | 533   | 592   | 773   | 636   |
| Rockfishes <sup>4</sup>                         | H | 1,535 | 1,505 | 2,181 | 2,615 | 3,004 | 3,072 | 2,829 | 2,520 | 2,688 | 2,567 |
|   | R | 201   | 236   | 340   | 366   | 547   | 492   | 484   | 440   | 481   | 437   |
| Salmon <sup>5</sup>                             | H | < 1   | 15    | 50    | 124   | 116   | 75    | 38    | 38    | 62    | 101   |
|   | R | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Surfperches                                     | H | 537   | 470   | 823   | 1,027 | 809   | 992   | 1,226 | 817   | 871   | 89    |
|   | R | 510   | 223   | 714   | 984   | 819   | 1,002 | 912   | 520   | 700   | 80    |
| Yellowfin tuna                                  | H | 7     | 1     | 1     | 6     | 4     | 108   | 156   | 28    | 15    | 20    |
|   | R | < 1   | < 1   | < 1   | < 1   | < 1   | < 1   | 4     | < 1   | < 1   | < 1   |

<sup>1</sup> Pacific recreational catch and effort estimates are based on multiple data sources. See data sources section.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.<sup>4</sup> This species may not be equivalent to species with similar names listed in the commercial tables.<sup>5</sup> Salmon harvest estimates exclude release mortality.



**2017 California State Economy (% of national total)**

| #Non-Employer Firms | #Establishments | #Employees         | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|--------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 3,374,050 (13.1%)   | 941,377 (12%)   | 14,896,625 (11.6%) | 955 (14.2%)                  | 1,442 (14%)                         | 2,802                             | 0.56  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)**

|                   |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product   | Firms    | 159    | 184    | 187    | 151    | 157    | 164    | 169    | 174    | 202    |
| prep. & packaging | Receipts | 10,852 | 9,695  | 9,788  | 9,283  | 9,866  | 11,112 | 12,978 | 14,725 | 13,419 |
| Seafood sales,    | Firms    | 202    | 203    | 209    | 236    | 218    | 227    | 221    | 228    | 230    |
| retail            | Receipts | 17,095 | 19,021 | 18,006 | 18,238 | 18,581 | 17,055 | 17,896 | 19,375 | 18,015 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)**

|                   |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|-------------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Seafood product   | Establishments | 47      | 48      | 48      | 41      | 44      | 53      | 48      | 41      | 39      |
| prep. & packaging | Employees      | 2,167   | 1,820   | 1,842   | 1,668   | 1,871   | 1,799   | 1,661   | 1,549   | 1,596   |
|                   | Payroll        | 69,529  | 62,480  | 60,411  | 52,977  | 57,603  | 60,762  | 59,829  | 64,374  | 61,611  |
| Seafood sales,    | Establishments | 289     | 314     | 404     | 275     | 320     | 341     | 349     | 371     | 320     |
| wholesale         | Employees      | 3,183   | 3,223   | 3,505   | 3,441   | 3,671   | 3,912   | 4,170   | 4,250   | 4,573   |
|                   | Payroll        | 128,813 | 137,810 | 149,302 | 173,959 | 181,698 | 175,927 | 201,903 | 212,079 | 224,800 |
| Seafood sales,    | Establishments | 153     | 158     | 157     | 149     | 155     | 167     | 170     | 171     | 153     |
| retail            | Employees      | 976     | 985     | 1,088   | 1,043   | 1,119   | 1,124   | 1,208   | 1,272   | 998     |
|                   | Payroll        | 21,785  | 22,718  | 25,168  | 24,221  | 26,702  | 28,044  | 28,437  | 31,722  | 24,860  |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2</sup>**

|                   |                | 2009      | 2010      | 2011      | 2012      | 2013    | 2014    | 2015      | 2016      | 2017      |
|-------------------|----------------|-----------|-----------|-----------|-----------|---------|---------|-----------|-----------|-----------|
| Ship and Boat     | Establishments | 123       | 117       | 108       | 120       | 113     | 108     | 103       | 104       | 97        |
| Building          | Employees      | 10,483    | 9,720     | 9,165     | 12,681    | 12,651  | 9,814   | 11,379    | 11,236    | 10,806    |
|                   | Payroll        | 460,239   | 448,338   | 434,449   | 544,819   | 537,438 | 534,787 | 583,717   | 548,198   | 551,754   |
| Deep Sea Freight  | Establishments | 41        | 54        | 51        | 45        | 34      | 43      | 56        | 45        | 38        |
| Transportation    | Employees      | ds        | 2,562     | 2,464     | 2,431     | 2,073   | 2,467   | 2,554     | 2,399     | 1,862     |
|                   | Payroll        | ds        | 236,235   | 256,962   | 236,423   | 218,054 | 187,383 | 235,546   | 230,946   | 186,036   |
| Deep Sea Pas-     | Establishments | 5         | 3         | 2         | 2         | 4       | 5       | 6         | 7         | 8         |
| senger Transpor-  | Employees      | ds        | ds        | ds        | ds        | ds      | ds      | ds        | 0         | 0         |
| tation            | Payroll        | ds        | ds        | ds        | ds        | ds      | ds      | ds        | 0         | 0         |
| Coastal and Great | Establishments | 30        | 25        | 21        | 22        | 24      | 30      | 34        | 32        | 35        |
| Lakes Freight     | Employees      | ds        | 554       | 395       | ds        | ds      | ds      | 851       | 759       | 620       |
| Transportation    | Payroll        | ds        | 30,431    | 24,708    | ds        | ds      | ds      | 70,978    | 62,151    | 55,847    |
| Port and Harbor   | Establishments | 19        | 21        | 19        | 59        | 31      | 33      | 30        | 30        | 19        |
| Operations        | Employees      | 345       | 435       | 508       | ds        | 651     | 535     | 570       | 742       | 574       |
|                   | Payroll        | 26,889    | 37,560    | 41,688    | ds        | 52,401  | 33,599  | 40,887    | 46,859    | 37,533    |
| Marine Cargo      | Establishments | 62        | 63        | 71        | 38        | 64      | 64      | 67        | 70        | 61        |
| Handling          | Employees      | 17,428    | 18,449    | 18,812    | 18,759    | ds      | ds      | 18,859    | 20,694    | 20,829    |
|                   | Payroll        | 1,211,572 | 1,273,268 | 1,333,805 | 1,351,874 | ds      | ds      | 1,761,284 | 1,898,249 | 2,047,600 |
| Navigational Ser- | Establishments | 39        | 41        | 45        | 35        | 36      | 37      | 38        | 37        | 43        |
| vices to Shipping | Employees      | 804       | 765       | 760       | 800       | 805     | 634     | 587       | 1,221     | 714       |
|                   | Payroll        | 61,720    | 58,899    | 62,065    | 61,166    | 67,665  | 59,927  | 60,228    | 68,514    | 73,082    |
| Marinas           | Establishments | 276       | 270       | 269       | 251       | 250     | 249     | 258       | 243       | 227       |
|                   | Employees      | 2,514     | 2,390     | 2,401     | 2,237     | 2,199   | 2,332   | 2,439     | 2,432     | 2,387     |
|                   | Payroll        | 78,890    | 80,631    | 82,958    | 71,777    | 72,737  | 79,840  | 84,427    | 86,510    | 91,703    |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

# Tables | Oregon



**2018 Economic Impacts of the Oregon Seafood Industry (millions of dollars)<sup>1</sup>**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 16,411       | 1,336 | 457    | 645         | 14,257          | 872   | 362    | 485         |
| Commercial Harvesters              | 5,061        | 317   | 133    | 186         | 5,061           | 317   | 133    | 186         |
| Seafood Processors & Dealers       | 1,902        | 190   | 73     | 95          | 1,501           | 150   | 57     | 75          |
| Importers                          | 1,150        | 372   | 60     | 113         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 644          | 90    | 31     | 41          | 420             | 59    | 20     | 27          |
| Retail                             | 7,655        | 367   | 161    | 209         | 7,275           | 347   | 152    | 197         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)**

|                        | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total                  | 101,866 | 102,396 | 146,176 | 126,113 | 176,758 | 155,783 | 113,697 | 146,953 | 143,528 | 171,620 |
| Finfish                | 51,879  | 57,310  | 75,076  | 70,833  | 78,764  | 76,415  | 59,072  | 62,771  | 69,794  | 64,683  |
| Shellfish              | 49,569  | 44,015  | 69,467  | 54,116  | 95,684  | 77,853  | 53,103  | 82,882  | 72,161  | 105,468 |
| Other                  | 417     | 1,071   | 1,633   | 1,164   | 2,309   | 1,514   | 1,523   | 1,300   | 1,573   | 1,470   |
| <b>Key Species</b>     |         |         |         |         |         |         |         |         |         |         |
| Albacore tuna          | 10,254  | 12,424  | 18,766  | 15,168  | 16,085  | 11,023  | 9,221   | 12,478  | 10,777  | 9,716   |
| Crab                   | 42,408  | 32,748  | 44,690  | 29,172  | 71,208  | 48,147  | 12,107  | 55,731  | 58,723  | 74,522  |
| Flatfish               | 9,001   | 7,425   | 7,920   | 8,276   | 10,837  | 9,788   | 11,039  | 12,209  | 11,702  | 10,475  |
| Pacific hake (whiting) | 3,783   | 5,414   | 16,518  | 14,611  | 20,405  | 18,274  | 7,146   | 8,694   | 16,385  | 16,435  |
| Pacific sardine        | 5,291   | 5,252   | 3,192   | 8,979   | 6,299   | 3,522   | 813     | 0       | 0       | 3       |
| Rockfish               | 1,082   | 1,113   | 1,694   | 1,819   | 2,052   | 2,518   | 3,035   | 2,679   | 6,338   | 7,757   |
| Sablefish              | 15,894  | 15,069  | 17,351  | 11,530  | 7,595   | 8,076   | 12,767  | 15,062  | 15,547  | 11,916  |
| Salmon                 | 3,535   | 7,677   | 6,726   | 6,943   | 12,417  | 20,075  | 11,842  | 8,265   | 5,531   | 5,675   |
| Shrimp                 | 6,865   | 11,006  | 24,607  | 24,749  | 24,153  | 29,367  | 40,413  | 25,093  | 12,745  | 26,909  |
| Sole                   | 7,692   | 6,289   | 6,314   | 6,808   | 9,329   | 8,252   | 9,396   | 10,539  | 10,192  | 9,236   |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                        | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total                  | 209,785 | 215,868 | 285,574 | 306,177 | 348,514 | 299,715 | 202,383 | 214,590 | 301,695 | 312,535 |
| Finfish                | 164,677 | 166,339 | 217,217 | 246,516 | 271,839 | 233,631 | 144,203 | 158,453 | 257,440 | 244,380 |
| Shellfish              | 44,329  | 47,733  | 65,748  | 58,050  | 73,925  | 64,239  | 56,345  | 54,639  | 42,621  | 66,689  |
| Other                  | 780     | 1,796   | 2,609   | 1,611   | 2,749   | 1,845   | 1,834   | 1,499   | 1,635   | 1,466   |
| <b>Key Species</b>     |         |         |         |         |         |         |         |         |         |         |
| Albacore tuna          | 10,138  | 10,702  | 9,682   | 9,938   | 10,209  | 8,769   | 7,585   | 7,235   | 4,732   | 5,809   |
| Crab                   | 21,856  | 15,869  | 17,260  | 8,691   | 26,034  | 11,918  | 2,294   | 15,714  | 19,015  | 23,135  |
| Flatfish               | 26,893  | 23,003  | 16,691  | 16,029  | 19,708  | 16,731  | 17,622  | 19,851  | 19,319  | 16,238  |
| Pacific hake (whiting) | 62,956  | 69,530  | 151,464 | 107,652 | 167,499 | 168,226 | 94,907  | 113,035 | 201,499 | 185,554 |
| Pacific sardine        | 47,357  | 45,971  | 24,302  | 94,062  | 57,956  | 17,171  | 4,699   | 9       | 3       | 21      |
| Rockfish               | 1,227   | 1,485   | 2,395   | 2,531   | 3,096   | 4,199   | 5,643   | 4,969   | 18,596  | 25,550  |
| Sablefish              | 7,279   | 6,301   | 5,081   | 4,745   | 3,844   | 3,297   | 5,001   | 5,526   | 5,556   | 5,678   |
| Salmon                 | 2,286   | 2,748   | 2,410   | 1,922   | 3,503   | 6,379   | 3,142   | 1,821   | 1,185   | 957     |
| Shrimp                 | 22,159  | 31,528  | 48,314  | 49,150  | 47,629  | 52,010  | 53,516  | 35,528  | 23,061  | 35,872  |
| Sole                   | 20,021  | 17,548  | 12,548  | 12,290  | 15,641  | 13,752  | 14,578  | 17,272  | 16,869  | 14,731  |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)<sup>1</sup>**

|                        | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Albacore tuna          | 1.01 | 1.16 | 1.94 | 1.53 | 1.58 | 1.26 | 1.22 | 1.72 | 2.28 | 1.67 |
| Crab                   | 1.94 | 2.06 | 2.59 | 3.36 | 2.74 | 4.04 | 5.28 | 3.55 | 3.09 | 3.22 |
| Flatfish               | 0.33 | 0.32 | 0.47 | 0.52 | 0.55 | 0.59 | 0.63 | 0.62 | 0.61 | 0.65 |
| Pacific hake (whiting) | 0.06 | 0.08 | 0.11 | 0.14 | 0.12 | 0.11 | 0.08 | 0.08 | 0.08 | 0.09 |
| Pacific sardine        | 0.11 | 0.11 | 0.13 | 0.10 | 0.11 | 0.21 | 0.17 | 0.04 | 0.09 | 0.15 |
| Rockfish               | 0.88 | 0.75 | 0.71 | 0.72 | 0.66 | 0.60 | 0.54 | 0.54 | 0.34 | 0.30 |
| Sablefish              | 2.18 | 2.39 | 3.42 | 2.43 | 1.98 | 2.45 | 2.55 | 2.73 | 2.80 | 2.10 |
| Salmon                 | 1.55 | 2.79 | 2.79 | 3.61 | 3.54 | 3.15 | 3.77 | 4.54 | 4.67 | 5.93 |
| Shrimp                 | 0.31 | 0.35 | 0.51 | 0.50 | 0.51 | 0.56 | 0.76 | 0.71 | 0.55 | 0.75 |
| Sole                   | 0.38 | 0.36 | 0.50 | 0.55 | 0.60 | 0.60 | 0.64 | 0.61 | 0.60 | 0.63 |

<sup>1</sup> The Pacific Region includes landings by Pacific at-sea processors. However, revenue from these landings are not included in the state tables.

**2018 Economic Impacts of Oregon Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 408   | 38,938  | 13,691  | 23,062      |
|                              | Private Boat | 265   | 27,748  | 11,430  | 17,638      |
|                              | Shore        | NA    | NA      | NA      | NA          |
| Total Durable Expenditures   |              | 2,229 | 239,588 | 108,502 | 161,526     |
| Total State Economic Impacts |              | 2,903 | 306,275 | 133,623 | 202,226     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 25,291            | Fishing Tackle             | 54,164                     |
| Private Boat                                    | 24,472            | Other Equipment            | 30,201                     |
| Shore   | NA                | Boat Expenses              | 88,122                     |
| Total   | 49,762            | Vehicle Expenses           | 68,341                     |
|   |                   | Second Home Expenses       | 4,652                      |
|   |                   | Total Durable Expenditures | 245,480                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 295,242                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 85   | 83   | 82   | 86   | 90   | 92   | 90   | 86   | 87   | 90   |
| Non-Coastal   | 129  | 126  | 125  | 129  | 134  | 137  | 135  | 129  | 130  | 134  |
| Out-of-State  | 15   | 15   | 15   | 15   | 16   | 16   | 16   | 15   | 15   | 16   |
| Total Anglers | 229  | 224  | 222  | 230  | 240  | 245  | 241  | 230  | 232  | 240  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------|------|------|------|------|------|------|------|------|------|------|
| For-Hire    | 49   | 45   | 45   | 51   | 58   | 61   | 65   | 57   | 59   | 64   |
| Private     | 136  | 119  | 113  | 135  | 157  | 173  | 150  | 122  | 127  | 146  |
| Shore       | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   |
| Total Trips | 184  | 164  | 159  | 187  | 214  | 235  | 214  | 179  | 187  | 210  |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                     |   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------|---|------|------|------|------|------|------|------|------|------|------|
| Albacore            | H | 42   | 38   | 29   | 63   | 22   | 48   | 35   | 37   | 16   | 26   |
| tuna                | R | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  |
| Black rock-         | H | 261  | 268  | 182  | 194  | 285  | 318  | 421  | 387  | 393  | 260  |
| fish                | R | 22   | 23   | 15   | 13   | 19   | 21   | 36   | 27   | 53   | 33   |
| Cabazon             | H | 7    | 7    | 6    | 5    | 4    | 3    | 3    | 4    | 8    | 5    |
|                     | R | 2    | 4    | 4    | 5    | 6    | 4    | 4    | 4    | 6    | 12   |
| Chinook             | H | 3    | 10   | 10   | 38   | 60   | 37   | 19   | 8    | 9    | 5    |
| salmon              | R | 6    | 2    | 9    | 8    | 9    | 5    | 2    | 1    | 2    | 6    |
| Coho salm-          | H | 90   | 18   | 19   | 16   | 15   | 100  | 28   | 8    | 21   | 26   |
| on                  | R | 121  | 22   | 22   | 17   | 23   | 69   | 27   | 6    | 20   | 42   |
| Greenlings          | H | 6    | 9    | 11   | 10   | 12   | 5    | 5    | 4    | 4    | 4    |
| (excluding lingcod) | R | 2    | 4    | 4    | 4    | 4    | 2    | 3    | 1    | 1    | 2    |
| Lingcod             | H | 23   | 29   | 36   | 49   | 69   | 53   | 64   | 49   | 63   | 70   |
|                     | R | 16   | 25   | 31   | 28   | 32   | 18   | 28   | 29   | 26   | 27   |
| Other flat-         | H | < 1  | 1    | < 1  | 1    | 2    | 1    | 3    | 3    | 17   | 4    |
| fishes              | R | < 1  | < 1  | < 1  | < 1  | 1    | < 1  | 2    | 2    | 2    | 1    |
| Other rock-         | H | 56   | 63   | 69   | 84   | 77   | 59   | 96   | 60   | 110  | 130  |
| fish                | R | 15   | 21   | 19   | 20   | 23   | 22   | 38   | 25   | 36   | 27   |
| Pacific hal-        | H | 13   | 9    | 10   | 11   | 13   | 11   | 11   | 11   | 12   | 11   |
| ibut                | R | 7    | 2    | 2    | 3    | 3    | 2    | 2    | 2    | 2    | 2    |

<sup>1</sup> Pacific recreational catch and effort estimates are based on multiple data sources. See data sources section.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

**2017 Oregon State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 295,127 (1.1%)      | 117,357 (1.5%)  | 1,596,637 (1.2%) | 79.1 (1.2%)                  | 123 (1.2%)                          | 241                               | ds  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>1</sup>**

|                       |          | 2009  | 2010  | 2011  | 2012  | 2013 | 2014  | 2015  | 2016  | 2017  |
|-----------------------|----------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| Seafood product       | Firms    | 15    | 15    | 16    | 14    | 11   | 11    | 12    | 14    | 12    |
| prep. & packaging     | Receipts | 466   | 510   | 467   | 346   | 319  | 484   | 1,088 | 1,776 | 699   |
| Seafood sales, retail | Firms    | 12    | 15    | 16    | 11    | ds   | 16    | 15    | 14    | 11    |
|                       | Receipts | 1,140 | 1,907 | 1,896 | 1,600 | ds   | 1,036 | 841   | 1,379 | 1,317 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1</sup>**

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 20     | 21     | 22     | 18     | 19     | 20     | 20     | 20     | 18     |
| prep. & packaging        | Employees      | 812    | 806    | 805    | 934    | 907    | 980    | 916    | 989    | 1,149  |
|                          | Payroll        | 26,202 | 27,007 | 32,438 | 31,970 | 37,265 | 39,290 | 41,181 | 42,832 | 45,695 |
| Seafood sales, wholesale | Establishments | 19     | 22     | 27     | 21     | 19     | 22     | 24     | 27     | 20     |
|                          | Employees      | ds     | ds     | ds     | 180    | 189    | 192    | 196    | 187    | 194    |
|                          | Payroll        | ds     | ds     | ds     | 7,602  | 8,065  | 8,601  | 9,121  | 9,892  | 10,118 |
| Seafood sales, retail    | Establishments | 23     | 21     | 20     | 18     | 20     | 23     | 25     | 23     | 22     |
|                          | Employees      | 151    | 162    | 163    | 126    | 147    | 170    | 181    | 174    | 147    |
|                          | Payroll        | 3,515  | 3,651  | 3,613  | 2,851  | 4,238  | 4,440  | 4,951  | 5,239  | 4,420  |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014  | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|-------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 35     | 34     | 34     | 33     | 32     | 30    | 29     | 26     | 27     |
|  | Employees      | 1,886  | 980    | 1,179  | 1,504  | 1,406  | ds    | 1,506  | 1,278  | 1,153  |
|  | Payroll        | 90,446 | 42,004 | 55,068 | 77,718 | 79,913 | ds    | 94,956 | 83,079 | 88,198 |
| Deep Sea Freight Transportation                | Establishments | 3      | 3      | 3      | 3      | 3      | 2     | 3      | 2      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds    | ds     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds    | ds     | 0      | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 9      | 8      | 8      | 8      | 7      | 8     | 8      | 12     | 11     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds    | 437    | 506    | 501    |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds    | 40,746 | 47,896 | 47,693 |
| Port and Harbor Operations                     | Establishments | 1      | 3      | 3      | 10     | 5      | 5     | 5      | 5      | 3      |
|  | Employees      | ds     | ds     | ds     | 90     | ds     | ds    | 49     | 45     | 29     |
|  | Payroll        | ds     | ds     | ds     | 6,512  | ds     | ds    | 3,437  | 2,686  | 2,061  |
| Marine Cargo Handling                          | Establishments | 13     | 12     | 13     | 5      | 8      | 7     | 7      | 6      | 10     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds    | ds     | 0      | 0      |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds    | ds     | 0      | 0      |
| Navigational Services to Shipping              | Establishments | 17     | 18     | 18     | 20     | 15     | 15    | 15     | 17     | 17     |
|  | Employees      | 189    | 144    | 152    | 176    | 81     | 67    | 74     | 69     | 109    |
|  | Payroll        | 10,154 | 9,577  | 9,592  | 12,219 | 6,534  | 3,958 | 3,998  | 4,789  | 5,566  |
| Marinas  | Establishments | 33     | 30     | 33     | 32     | 34     | 34    | 36     | 35     | 31     |
|  | Employees      | 109    | 102    | 102    | 119    | 104    | 113   | 119    | 137    | 137    |
|  | Payroll        | 2,602  | 2,290  | 2,382  | 3,034  | 3,148  | 3,584 | 3,643  | 3,550  | 4,235  |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.



# Tables | Washington



## Washington | Commercial Fisheries

### 2018 Economic Impacts of the Washington Seafood Industry (millions of dollars)<sup>1</sup>

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 55,280       | 8,333 | 2,153  | 3,317       | 16,614          | 1,284 | 526    | 716         |
| Commercial Harvesters              | 5,066        | 495   | 207    | 295         | 5,066           | 495   | 207    | 295         |
| Seafood Processors & Dealers       | 15,591       | 1,738 | 653    | 864         | 1,918           | 214   | 80     | 106         |
| Importers                          | 14,857       | 4,808 | 771    | 1,466       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 2,394        | 361   | 121    | 165         | 628             | 95    | 32     | 43          |
| Retail                             | 17,371       | 931   | 401    | 527         | 9,001           | 480   | 207    | 272         |

### Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>2</sup>

|                        | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total                  | 161,303 | 200,341 | 260,593 | 220,915 | 263,739 | 248,169 | 229,146 | 253,241 | 268,768 | 249,471 |
| Finfish                | 54,229  | 73,446  | 90,793  | 86,148  | 92,802  | 81,795  | 63,861  | 71,284  | 80,229  | 61,112  |
| Shellfish              | 104,835 | 123,594 | 164,475 | 127,580 | 165,659 | 161,935 | 159,160 | 176,605 | 183,071 | 183,354 |
| Other                  | 2,238   | 3,301   | 5,325   | 7,187   | 5,278   | 4,439   | 6,125   | 5,351   | 5,468   | 5,005   |
| <b>Key Species</b>     |         |         |         |         |         |         |         |         |         |         |
| Albacore tuna          | 16,390  | 14,575  | 22,253  | 28,464  | 24,745  | 21,177  | 19,961  | 24,716  | 23,494  | 14,749  |
| Clams                  | 412     | 443     | 327     | 263     | 580     | 560     | 115     | NA      | NA      | 474     |
| Crab                   | 48,962  | 58,599  | 83,991  | 60,599  | 86,517  | 80,509  | 72,858  | 89,168  | 101,391 | 97,886  |
| Pacific hake (whiting) | NA      | NA      | 7,190   | 5,882   | 7,473   | 5,431   | 2,563   | 4,659   | 8,052   | NA      |
| Pacific halibut        | 1,140   | 1,551   | 2,333   | 2,665   | 2,295   | 2,531   | 2,624   | 3,210   | 3,303   | 3,095   |
| Rockfish               | 815     | 912     | 912     | 1,355   | 812     | 713     | 850     | 542     | 642     | 1,265   |
| Sablefish              | 8,712   | 9,320   | 12,378  | 7,813   | 4,764   | 6,988   | 7,003   | 7,779   | 9,161   | 6,533   |
| Salmon                 | 21,901  | 41,530  | 41,753  | 28,035  | 41,396  | 38,388  | 27,270  | 26,657  | 31,984  | 32,368  |
| Shrimp                 | 4,137   | 5,622   | 7,140   | 6,986   | 8,664   | 19,706  | 32,820  | 12,182  | 7,156   | 9,805   |
| Sole                   | 1,378   | 846     | 1,290   | 1,471   | 1,753   | 976     | 1,037   | 1,227   | 1,496   | 1,572   |

### Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                        | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018   |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Total                  | 115,546 | 120,761 | 183,593 | 203,497 | 252,692 | 178,977 | 144,281 | 167,619 | 214,402 | 80,848 |
| Finfish                | 82,225  | 82,625  | 141,097 | 170,618 | 204,349 | 123,314 | 82,149  | 124,884 | 175,036 | 42,684 |
| Shellfish              | 31,207  | 35,516  | 39,837  | 29,038  | 44,717  | 53,226  | 59,318  | 40,228  | 37,202  | 36,229 |
| Other                  | 2,113   | 2,621   | 2,659   | 3,842   | 3,625   | 2,437   | 2,814   | 2,508   | 2,164   | 1,936  |
| <b>Key Species</b>     |         |         |         |         |         |         |         |         |         |        |
| Albacore tuna          | 16,149  | 13,181  | 13,259  | 19,353  | 17,588  | 18,088  | 17,196  | 15,515  | 11,453  | 9,176  |
| Clams                  | 252     | 270     | 187     | 135     | 249     | 282     | 69      | NA      | NA      | 192    |
| Crab                   | 20,723  | 23,098  | 27,264  | 17,041  | 28,120  | 19,423  | 15,140  | 22,841  | 27,527  | 24,495 |
| Pacific hake (whiting) | NA      | NA      | 76,017  | 38,656  | 59,918  | 49,655  | 32,977  | 82,078  | 131,038 | NA     |
| Pacific halibut        | 495     | 416     | 527     | 615     | 546     | 538     | 557     | 656     | 768     | 896    |
| Rockfish               | 1,691   | 1,897   | 1,806   | 2,584   | 1,633   | 1,455   | 1,810   | 1,327   | 2,638   | 6,777  |
| Sablefish              | 3,507   | 3,263   | 3,423   | 3,014   | 1,970   | 2,328   | 2,326   | 2,544   | 2,728   | 2,638  |
| Salmon                 | 32,107  | 29,220  | 38,673  | 19,895  | 49,352  | 28,078  | 21,479  | 16,374  | 20,841  | 17,847 |
| Shrimp                 | 7,795   | 10,160  | 10,202  | 10,048  | 14,295  | 31,450  | 42,048  | 14,911  | 7,505   | 9,314  |
| Sole                   | 3,370   | 2,375   | 2,164   | 2,384   | 2,643   | 1,399   | 1,458   | 1,863   | 2,295   | 2,066  |

### Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                        | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Albacore tuna          | 1.01 | 1.11 | 1.68 | 1.47 | 1.41 | 1.17 | 1.16 | 1.59 | 2.05 | 1.61 |
| Clams                  | 1.63 | 1.64 | 1.75 | 1.95 | 2.32 | 1.98 | 1.67 | NA   | NA   | 2.47 |
| Crab                   | 2.36 | 2.54 | 3.08 | 3.56 | 3.08 | 4.15 | 4.81 | 3.90 | 3.68 | 4.00 |
| Pacific hake (whiting) | NA   | NA   | 0.09 | 0.15 | 0.12 | 0.11 | 0.08 | 0.06 | 0.06 | NA   |
| Pacific halibut        | 2.30 | 3.73 | 4.43 | 4.34 | 4.20 | 4.70 | 4.71 | 4.90 | 4.30 | 3.46 |
| Rockfish               | 0.48 | 0.48 | 0.51 | 0.52 | 0.50 | 0.49 | 0.47 | 0.41 | 0.24 | 0.19 |
| Sablefish              | 2.48 | 2.86 | 3.62 | 2.59 | 2.42 | 3.00 | 3.01 | 3.06 | 3.36 | 2.48 |
| Salmon                 | 0.68 | 1.42 | 1.08 | 1.41 | 0.84 | 1.37 | 1.27 | 1.63 | 1.53 | 1.81 |
| Shrimp                 | 0.53 | 0.55 | 0.70 | 0.70 | 0.61 | 0.63 | 0.78 | 0.82 | 0.95 | 1.05 |
| Sole                   | 0.41 | 0.36 | 0.60 | 0.62 | 0.66 | 0.70 | 0.71 | 0.66 | 0.65 | 0.76 |

<sup>1</sup> The Pacific Region includes landings by Pacific at-sea processors. However, revenue from these landings are not included in the state tables.

<sup>2</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Washington Recreational Fishing Expenditures (thousands of dollars)<sup>1</sup>**

|                                 |              | #Jobs | Sales   | Income  | Value Added |
|---------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts<br>by Fishing Mode | For-Hire     | 478   | 50,675  | 17,471  | 30,175      |
|                                 | Private Boat | 1,039 | 154,078 | 50,304  | 92,206      |
|                                 | Shore        | NA    | NA      | NA      | NA          |
| Total Durable Expenditures      |              | 3,934 | 487,087 | 200,327 | 321,424     |
| Total State Economic Impacts    |              | 5,450 | 691,840 | 268,102 | 443,804     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 31,481            | Fishing Tackle             | 64,423                     |
| Private Boat                                    | 115,558           | Other Equipment            | 32,374                     |
| Shore   | NA                | Boat Expenses              | 324,232                    |
| Total   | 147,039           | Vehicle Expenses           | 29,143                     |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 450,173                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 597,212                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 306  | 222  | 248  | 248  | 268  | 251  | 253  | 172  | 303  | 186  |
| Non-Coastal   | 30   | 25   | 27   | 27   | 28   | 28   | 28   | 21   | 31   | 22   |
| Out-of-State  | 24   | 19   | 21   | 21   | 22   | 22   | 22   | 17   | 24   | 17   |
| Total Anglers | 360  | 266  | 296  | 296  | 318  | 301  | 303  | 210  | 358  | 225  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017  | 2018 |
|-------------|-------|------|------|------|------|------|------|------|-------|------|
| For-Hire    | 79    | 72   | 76   | 74   | 76   | 88   | 83   | 64   | 83    | 65   |
| Private     | 1,031 | 652  | 770  | 770  | 860  | 766  | 784  | 431  | 1,012 | 493  |
| Shore       | NA    | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA    | NA   |
| Total Trips | 1,110 | 724  | 846  | 844  | 936  | 854  | 867  | 495  | 1,095 | 558  |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2,3,4</sup>**

|                                |   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------------------------|---|------|------|------|------|------|------|------|------|------|------|
| Albacore                       | H | 25   | 31   | 15   | 50   | 54   | 75   | 79   | 47   | 30   | 25   |
|                                | R | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  | < 1  |
| Black rock-fish                | H | 166  | 161  | 177  | 226  | 238  | 259  | 288  | 298  | 194  | 216  |
|                                | R | 9    | 17   | 13   | 14   | 14   | 19   | 15   | 16   | 19   | 15   |
| Cabezon                        | H | 2    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    |
|                                | R | < 1  | < 1  | < 1  | < 1  | < 1  | 1    | < 1  | < 1  | 1    | 1    |
| Chinook salmon                 | H | 26   | 75   | 62   | 71   | 64   | 87   | 88   | 37   | 46   | 13   |
|                                | R | 28   | 32   | 44   | 36   | 39   | 34   | 20   | 18   | 12   | 10   |
| Coho salmon                    | H | 152  | 39   | 41   | 32   | 47   | 136  | 80   | 19   | 43   | 36   |
|                                | R | 166  | 54   | 66   | 59   | 76   | 85   | 60   | 25   | 42   | 42   |
| Greenlings (excluding lingcod) | H | 2    | 4    | 3    | 3    | 4    | 3    | 2    | 3    | 2    | 2    |
|                                | R | 1    | 3    | 2    | 2    | 3    | 3    | 2    | 2    | 2    | 1    |
| Lingcod                        | H | 18   | 25   | 37   | 38   | 34   | 37   | 34   | 48   | 46   | 41   |
|                                | R | 10   | 17   | 24   | 18   | 11   | 9    | 10   | 13   | 5    | 6    |
| Other flat-fishes              | H | < 1  | < 1  | < 1  | 1    | 2    | 3    | 3    | 8    | 5    | 6    |
|                                | R | < 1  | 1    | < 1  | 1    | 2    | 2    | 1    | < 1  | < 1  | < 1  |
| Other rock-fish                | H | 32   | 47   | 52   | 28   | 30   | 39   | 34   | 46   | 53   | 41   |
|                                | R | 4    | 6    | 6    | 5    | 7    | 8    | 8    | 9    | 7    | 8    |
| Pacific halibut                | H | 7    | 7    | 8    | 8    | 8    | 9    | 8    | 8    | 10   | 11   |
|                                | R | 3    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 2    | 2    |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.<sup>2</sup> Pacific recreational catch and effort estimates are based on multiple data sources. See data sources section.<sup>3</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>4</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

## Washington | Marine Economy

### 2017 Washington State Economy (% of national total)<sup>1</sup>

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 478,331 (1.9%)      | 191,045 (2.4%)  | 2,768,660 (2.2%) | 170 (2.5%)                   | 265 (2.6%)                          | 517                               | ds  |

### Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                       |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product       | Firms    | 47    | 39    | 37    | 42    | 42    | 51    | 59    | 65    | 48    |
| prep. & packaging     | Receipts | 5,022 | 4,228 | 3,859 | 4,377 | 4,094 | 5,270 | 3,555 | 4,697 | 3,297 |
| Seafood sales, retail | Firms    | 42    | 30    | 34    | 42    | 41    | 36    | 35    | 33    | 36    |
|                       | Receipts | 2,462 | 1,273 | 2,370 | 1,871 | 3,017 | 2,559 | 2,071 | 1,991 | 2,213 |

### Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                          |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--------------------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Seafood product          | Establishments | 86      | 93      | 90      | 90      | 86      | 90      | 85      | 83      | 73      |
| prep. & packaging        | Employees      | 4,860   | 5,296   | 5,387   | 6,118   | 6,224   | 5,945   | 5,753   | 5,254   | 5,204   |
|                          | Payroll        | 232,543 | 254,592 | 293,112 | 326,827 | 315,379 | 329,739 | 325,389 | 350,599 | 352,999 |
| Seafood sales, wholesale | Establishments | 108     | 105     | 107     | 101     | 116     | 119     | 118     | 120     | 109     |
|                          | Employees      | 1,103   | 970     | 911     | 1,085   | 999     | 1,098   | 1,077   | 1,142   | 940     |
|                          | Payroll        | 48,044  | 45,871  | 45,543  | 51,508  | 49,683  | 52,761  | 54,339  | 60,854  | 55,073  |
| Seafood sales, retail    | Establishments | 43      | 47      | 44      | 40      | 35      | 33      | 39      | 37      | 33      |
|                          | Employees      | 239     | 282     | 253     | 256     | 266     | 276     | 279     | 296     | 213     |
|                          | Payroll        | 8,324   | 9,098   | 7,786   | 8,210   | 9,069   | 9,938   | 10,865  | 11,059  | 8,342   |

### Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1</sup>

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 162     | 152     | 135     | 141     | 138     | 131     | 143     | 129     | 135     |
|  | Employees      | 6,710   | 5,406   | 5,232   | 5,294   | 5,387   | 5,060   | 4,653   | 4,930   | 5,213   |
|  | Payroll        | 312,240 | 284,759 | 276,402 | 290,400 | 273,825 | 262,730 | 265,732 | 269,879 | 296,499 |
| Deep Sea Freight Transportation                | Establishments | 25      | 20      | 14      | 12      | 8       | 8       | 8       | 5       | 6       |
|  | Employees      | 305     | 209     | ds      | ds      | 200     | 204     | 194     | 170     | 0       |
|  | Payroll        | 28,897  | 24,711  | ds      | 14,014  | 14,892  | 14,991  | 13,981  | 13,822  | 0       |
| Deep Sea Passenger Transportation              | Establishments | 5       | 4       | 2       | 2       | 5       | 4       | 6       | 4       | 4       |
|  | Employees      | ds      | ds      | ds      | ds      | ds      | 1,412   | 1,277   | 1,151   | 919     |
|  | Payroll        | ds      | ds      | ds      | ds      | ds      | 54,346  | 73,134  | 72,462  | 59,817  |
| Coastal and Great Lakes Freight Transportation | Establishments | 24      | 30      | 28      | 28      | 35      | 38      | 35      | 41      | 39      |
|  | Employees      | 2,245   | 1,731   | 1,684   | 1,557   | 2,186   | 2,020   | 1,879   | 1,956   | 1,533   |
|  | Payroll        | 168,783 | 130,398 | 132,068 | 126,401 | 170,003 | 163,075 | 162,635 | 163,240 | 148,497 |
| Port and Harbor Operations                     | Establishments | 11      | 9       | 9       | 48      | 28      | 27      | 23      | 23      | 13      |
|  | Employees      | 118     | 74      | 75      | 1,509   | 181     | 304     | 250     | 226     | 128     |
|  | Payroll        | 6,437   | 4,662   | 4,937   | 85,042  | 11,894  | 16,449  | 14,278  | 14,169  | 9,911   |
| Marine Cargo Handling                          | Establishments | 27      | 26      | 32      | 13      | 30      | 29      | 30      | 30      | 35      |
|  | Employees      | 2,953   | ds      | 3,910   | ds      | ds      | ds      | 3,966   | 4,143   | 4,241   |
|  | Payroll        | 239,490 | ds      | 323,286 | ds      | ds      | ds      | 424,469 | 436,086 | 469,911 |
| Navigational Services to Shipping              | Establishments | 69      | 79      | 78      | 72      | 73      | 71      | 68      | 76      | 81      |
|  | Employees      | 1,168   | 1,225   | 1,207   | ds      | ds      | 1,297   | 1,176   | 1,175   | 1,292   |
|  | Payroll        | 102,934 | 102,766 | 94,781  | ds      | ds      | 101,251 | 88,363  | 88,045  | 116,801 |
| Marinas  | Establishments | 110     | 117     | 114     | 100     | 110     | 106     | 102     | 97      | 101     |
|  | Employees      | 570     | 560     | 517     | 479     | 529     | 530     | 588     | 525     | 559     |
|  | Payroll        | 18,811  | 18,783  | 18,364  | 18,038  | 18,914  | 20,348  | 21,944  | 21,809  | 22,021  |

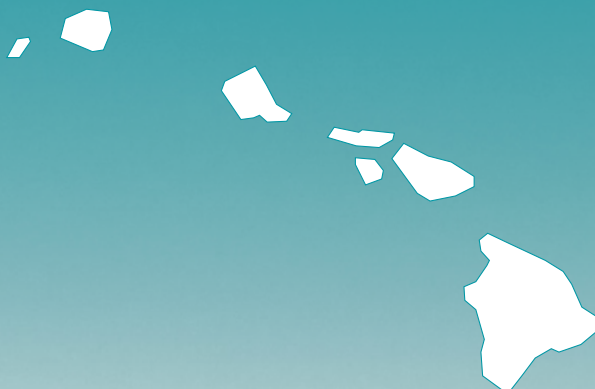
<sup>1</sup> ds = Data are suppressed.

<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.



# Western Pacific Region

- Hawaiʻi



Commercial fishing boats at Pier 38 in Honolulu, Hawaiʻi.  
Photo: NOAA Fisheries/Noelle Olsen



## MANAGEMENT CONTEXT

The U.S. Pacific Islands Region includes the state of Hawai'i; the territories of American Samoa and Guam; the Commonwealth of the Northern Mariana Islands (CNMI); and the Pacific Remote Island Areas. Federal fisheries in this region are managed by the Western Pacific Fishery Management Council (WPFMC) and NOAA Fisheries under five fishery ecosystem plans (FEPs). These plans focus on place-based rather than species- or fishery-based management.

### Western Pacific Fishery Ecosystem Plans

- American Samoa
- Hawai'i
- Mariana Archipelago (Guam and the CNMI)
- Pacific Remote Island Areas
- Western Pacific Pelagics

Three of the stocks or stock complexes covered in these FEPs were listed as overfished in 2018: Pacific bluefin tuna (Pacific stock); striped marlin (Western/Central Pacific stock); and seamount groundfish complex (Hancock seamount stock). Four stocks/complexes were subject to overfishing in 2018: Pacific bluefin tuna (Pacific stock); swordfish (Eastern Pacific stock); yellowfin tuna (Eastern Pacific stock; newly added to the overfishing list in 2018); and striped marlin (Western/Central Pacific stock). Bigeye tuna (Western and Central Pacific stock) was removed from the overfishing list in 2018.

Because fishery data are limited in most of these areas, only information for the Hawai'i and Western Pacific pelagic fisheries is reported here. No catch share programs have been implemented in this region.

**Hawai'i FEP:** NOAA Fisheries, the WPFMC, and the State of Hawai'i collaborate to manage fisheries across the Hawai'i Archipelago. The major fisheries in Hawai'i include trolling for pelagic species such as tuna, marlin, wahoo, and mahimahi; deepwater hook-and-line bottom fishing; and various forms of net fishing that target nearshore pelagic and reef fish species. Under this FEP, the Hancock Seamount groundfish complex is currently overfished. This fishery has been closed since 1986.

**Western Pacific Pelagics FEP:** The management

species covered under this FEP include tunas, billfishes, sharks, squids, and an assortment of other species. These species include mahimahi, wahoo, moonfish, and pomfret caught by the Hawai'i longline fishery and smaller boats that use diverse gears including trolling, hand-line, and traditional fishing methods. Of these species, yellowfin tuna, Pacific bluefin tuna, swordfish, and the Western/Central Pacific striped marlin stock are considered subject to overfishing. The Western/Central Pacific striped marlin stock and Pacific bluefin tuna stock are also listed as overfished.

In addition to management by the WPFMC and NOAA Fisheries, pelagic fish, such as bigeye and yellowfin tunas, are managed by two regional fishery management organizations (RFMOs). The Western and Central Pacific Fisheries Commission (WCPFC) has authority to manage pelagic fisheries in the Western and Central Pacific Ocean, while the Inter-American Tropical Tuna Commission (IATTC) manages pelagic fisheries in the Eastern Pacific Ocean. Fish species and fisheries under the purview of both RFMOs migrate across national boundaries and between RFMO areas, requiring coordinated management. Since 2009, the annual bigeye tuna catch limit has been recommended by the WCPFC and implemented by NOAA Fisheries for the U.S. longline fleet in the Western and Central Pacific. The IATTC establishes the harvest limit for bigeye tuna for U.S. longline vessels longer than 24 meters in the Eastern Tropical Pacific.

## COMMERCIAL FISHERIES — WESTERN PACIFIC (HAWAI'I) REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

**Key Western (Hawai'i) Pacific Commercial Species**

- Dolphinfinch (*mahi-mahi*)
- Lobsters (*ula*)
- Marlin (*a'u*)
- Moonfish (*opah*)
- Pomfrets (*monchong*)
- Scad (*opelu*)
- Snappers
- Swordfish (*mekajiki*)
- Tunas (*aku*)
- Wahoo (*ono*)

**Economic Impacts**

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this

case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry supported 8,086 full- and part-time jobs and generated \$776.2 million in sales, \$233.4 million in income, and \$343.6 million in value-added impacts in the Western Pacific (Hawai'i) Region. Importers generated the largest sales impacts (\$306.4 million). Commercial harvesters generated the largest value-added impacts (\$108.9 million), income impacts (\$75.9 million), and employment impacts (3,559 jobs).

**Landings Revenue**

In 2018, landings revenue in the Western Pacific (Hawai'i) totaled \$119.2 million, a 67% increase from 2009 (a 44% increase in real terms after adjusting for inflation) and a 2% increase from 2017.

Finfish landings revenue accounted for 100% of all landings revenue. In 2018, tunas (*aku*) (\$94.2 million), swordfish (*mekajiki*) (\$3.7 million), and dolphinfinch (*mahi-mahi*) (\$3.5 million) had the highest landings revenue in this region. Together, these top three species accounted for 85% of total landings revenue.

From 2009 to 2018, pomfrets (*monchong*) (107%, 78% in real terms), tunas (*aku*) (97%, 70% in real terms), and wahoo (*ono*) (82%, 57% in real terms) had the largest increases, while lobsters (*ula*) (-90%, -91% in real terms), swordfish (*mekajiki*) (-50%, -57% in real terms), and other (-23%, -34% in real terms) had the largest decreases. From 2017 to 2018, tunas (*aku*) (8%), moonfish (*opah*) (3%), and dolphinfinch (*mahi-mahi*) (1%) had the largest increases, while swordfish (*mekajiki*) (-36%), lobsters (*ula*) (-33%), and snappers (-31%) had the largest decreases.

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

**Commercial Revenue: Largest Increases***From 2009:*

- Pomfrets (*monchong*) (107%, 78% in real terms)
- Tunas (*aku*) (97%, 70% in real terms)
- Wahoo (*ono*) (82%, 57% in real terms)

*From 2017:*

- Tunas (*aku*) (8%)
- Moonfish (*opah*) (3%)
- Dolphinfinh (*mahimahi*) (1%)

**Commercial Revenue: Largest Decreases***From 2009:*

- Lobsters (*ula*) (-90%, -91% in real terms)
- Swordfish (*mekajiki*) (-50%, -57% in real terms)

*From 2017:*

- Swordfish (*mekajiki*) (-36%)
- Lobsters (*ula*) (-33%)
- Snappers (-31%)

**Commercial Landings: Largest Increases***From 2009:*

- Wahoo (*ono*) (90%)
- Tunas (*aku*) (64%)
- Pomfrets (*monchong*) (48%)

*From 2017:*

- Moonfish (*opah*) (28%)
- Wahoo (*ono*) (18%)
- Dolphinfinh (*mahimahi*) (6%)

**Commercial Landings: Largest Decreases***From 2009:*

- Lobsters (*ula*) (-86%)
- Swordfish (*mekajiki*) (-55%)
- Snappers (-31%)

*From 2017:*

- Lobsters (*ula*) (-52%)
- Snappers (-36%)
- Swordfish (*mekajiki*) (-32%)

**Landings**

In 2018, Western Pacific (Hawai'i) Region commercial fishermen landed over 35.5 million pounds of finfish and shellfish. This represents a 32% increase from 2009 and a 4% decrease from 2017. Tunas (*aku*) contributed the highest landings volume in the region, accounting for 67% of total landing weight.

From 2009 to 2018, wahoo (*ono*) (90%), tunas (*aku*) (64%), and pomfrets (*monchong*) (48%) had the largest increases, while lobsters (*ula*) (-86%), swordfish (*mekajiki*) (-55%), and snappers (-31%) had the largest decreases. From 2017 to 2018, moonfish (*opah*) (28%), wahoo (*ono*) (18%), and dolphinfinh (*mahimahi*) (6%) had the largest increases, while lobsters (*ula*) (-52%), snappers (-36%), and swordfish (*mekajiki*) (-32%) had the largest decreases.

**Prices**

In 2018, lobsters (*ula*) (\$8.97 per pound) received the highest ex-vessel price in the region. Landings of marlin (*a'u*) (\$1.22 per pound) had the lowest ex-vessel price. From 2009 to 2018, dolphinfinh (*mahimahi*) (56%, 35% in real terms), snappers (42%, 22% in real terms), and pomfrets (*monchong*) (39%, 20% in real terms) had the largest increases, while lobsters (*ula*) (-28%, -38% in real terms) and wahoo (*ono*) (-4%, -18% in real terms) had the largest decreases. From 2017 to 2018, lobsters (*ula*) (38%), tunas (*aku*) (13%), and snappers (9%) had the largest increases, while moonfish (*opah*) (-20%), wahoo (*ono*) (-16%), and marlin (*a'u*) (-11%) had the largest decreases.

**RECREATIONAL FISHERIES — WESTERN PACIFIC (HAWAI'I) REGION**

In the Western Pacific (Hawai'i) Region, recreational fishing includes all non-commercial fishing, which is fishing that does not meet the definition of commercial fishing in the Magnuson-Stevens Fishery Conservation and Management Act, and includes, but is not limited to, sustenance, subsistence, traditional indigenous, and recreational

fishing.<sup>3</sup> This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>4</sup>

#### Key Western Pacific (Hawai'i) Recreational Species<sup>5,6</sup>

- Bigeye (*akule*) and mackerel (*opelu*) scad
- Blue marlin (*a'u*)
- Deep 7 bottomfish: binghams snapper, hawaiian grouper, ironjaw snapper, longtailed red snapper, pink snapper, ruby snapper, and von siebolds snapper
- Dolphinfin (*mahimahi*)
- Goatfishes
- Jacks (trevallys and other jacks)
- Other snappers
- Skipjack tuna (*aku*)
- Wahoo (*ono*)
- Yellowfin tuna (*'ahi*)

## Economic Impacts and Expenditures

The economic contribution of recreational fishing activities in the Western Pacific (Hawai'i) Region is based on spending by recreational anglers.<sup>7</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year.

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is speci-

fied on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

In 2018, economic impacts from recreational fishing activities in Hawai'i generated 2,900 jobs, \$394.2 million in sales, \$121.6 million in income, and \$218.4 million in value-added impacts.

Data for the for-hire mode is not available in Hawai'i. Of the two fishing trip modes, shore fishing trips had the greatest economic impact, accounting for 66% of employment impacts. Trip expenditures for shore and private boat modes totaled \$325.4 million, with a large portion of these trip expenditures coming from trips in the shore (61%) mode. Data for durable expenditures is not available due to unavailable participation estimates.

## Participation

Participation estimates for Hawai'i are not available.

## Fishing Trips

In 2018, recreational fishermen took 3.4 million salt-water fishing trips in the state of Hawai'i. This number represented a 58% increase from 2009 and a 167% increase from 2017. Of all fishing trips, 80% were taken from the shore sector.

<sup>3</sup> For a definition of non-commercial fishing see the electronic code of federal regulations. [Available at: [https://gov.ecfr.io/cgi-bin/text-idx?SID=3a25270218fea2849201cc659f78167f&mc=true&node=se50.13.665\\_112&rgn=div8](https://gov.ecfr.io/cgi-bin/text-idx?SID=3a25270218fea2849201cc659f78167f&mc=true&node=se50.13.665_112&rgn=div8).]

<sup>4</sup> Data for this state is from MRIP estimates produced using pre-calibration methods.

<sup>5</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>6</sup> Goatfishes: bandtail goatfish, blue goatfish, doublebar goatfish, goatfish family, goatfishes, manybar goatfish, pflugers goatfish, whitesaddle goatfish, yellowfin goatfish, and yellowstripe goatfish. Jacks (trevallys and other jacks): African pompano, bigeye trevally, black jack, black trevally, bluefin trevally, giant trevally, greater amberjack, island jack, jack family, and jack genus. Other snappers: binghams snapper, blacktail snapper, bluestripe snapper, green jobfish, ironjaw snapper, longtailed red snapper, pink snapper, ruby snapper, smalltooth jobfish, snapper family, snapper genus, and von siebolds snapper.

<sup>7</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

## Harvest and Release Trends

Of the Western Pacific (Hawai'i) Region's key species and species groups, bigeye (akule) and mackerel (ope-lu) scad (4 million fish), goatfishes (2.1 million fish), and jacks (trevallys and other jacks) (614,401 fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, blue marlin (a'u) (472%), deep 7 bottomfish (466%), and dolphinfish (mahimahi) (113%) had the largest increases, while skipjack tuna (aku) (-5%) had the largest decreases. From 2017 to 2018, dolphinfish (mahimahi) (361%) and blue marlin (a'u) (320%) had the largest increases. There were no percent decreases.

### Harvest and Release: Largest Increases

*From 2009:*

- Blue marlin (a'u) (472%)
- Deep 7 bottomfish (466%)
- Dolphinfish (mahimahi) (113%)

*From 2017:*

- Dolphinfish (mahimahi) (361%)
- Blue marlin (a'u) (320%)

### Harvest and Release: Largest Decreases

*From 2009:*

- Skipjack tuna (aku) (-5%)

*From 2017:*

- There were no percent decreases.

## MARINE ECONOMY — WESTERN PACIFIC (HAWAI'I) REGION

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>8</sup>

To measure the size of the commercial fishing sector in

a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>9</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

Hawai'i had a CFLQ value of 3.93 for 2017.

In 2017, 32,800 employer establishments operated in Hawai'i (including marine and non-marine related establishments). These establishments employed 544,056 workers and had a total annual payroll of \$24.4 billion. The gross state product of Hawai'i was approximately \$89.3 billion in 2017.<sup>10</sup>

## Seafood Sales and Processing

### Seafood Product Preparation and Packaging: In

2017, Hawai'i had 10 non-employer firms in the seafood product preparation and packaging sector (a 43% increase from 2009). Annual receipts for these firms totaled \$717,000. There were 3 employer firms in this sector (a 200% increase from 2009). The Census Bureau suppressed 2017 employment and payroll data for this sector in the state.

**Seafood Sales, Retail:** In 2017, there were 27 non-employer firms in seafood retail sales in Hawai'i (a 23% decrease from 2009). Annual receipts for these firms totaled \$2.1 million. There were 21 employer firms in the seafood retail sector (a 16% decrease from 2009). These establishments employed 308 workers (a 95% increase from 2009) and had a total annual payroll of \$8.5 million.

**Seafood Sales, Wholesale:** There were 32 employer firms in the seafood wholesale sector in Hawai'i in 2017 (a 16% decrease from 2009). These establishments employed 621 workers (a 15% increase from 2009) and had a total annual payroll of \$22.9 million.

<sup>8</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>9</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>10</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]



## Transportation Support and Marine Operations

Data for the transportation support and marine operations sectors in Hawai'i's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the state economy. For example, in 2017, the marine cargo handling sector accounted for \$86.3 million in payroll.



# Tables | Hawai'i



**2018 Economic Impacts of the Hawai'i Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 8,086        | 776   | 233    | 344         | 6,379           | 401   | 157    | 215         |
| Commercial Harvesters              | 3,559        | 207   | 76     | 109         | 3,559           | 207   | 76     | 109         |
| Seafood Processors & Dealers       | 692          | 71    | 28     | 36          | 411             | 42    | 17     | 21          |
| Importers                          | 947          | 306   | 49     | 93          | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 411          | 45    | 16     | 21          | 199             | 22    | 8      | 10          |
| Retail                             | 2,478        | 146   | 64     | 84          | 2,210           | 130   | 57     | 74          |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>**

|                               | 2009   | 2010   | 2011   | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|-------------------------------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| Total                         | 71,257 | 84,091 | 91,611 | 112,343 | 108,031 | 101,313 | 103,424 | 118,182 | 116,423 | 119,158 |
| Finfish                       | 70,801 | 83,650 | 91,227 | 111,772 | 107,115 | 100,572 | 103,314 | 117,784 | 116,069 | 118,713 |
| Shellfish                     | 347    | 343    | 291    | 435     | 567     | 495     | 58      | 302     | 244     | 361     |
| Other                         | 110    | 98     | 93     | 136     | 349     | 247     | 52      | 96      | 110     | 84      |
| <b>Key Species</b>            |        |        |        |         |         |         |         |         |         |         |
| Dolphinfish                   | 2,853  | 3,303  | 4,314  | 5,309   | 4,130   | 4,412   | 3,427   | 4,512   | 3,451   | 3,493   |
| Lobsters                      | 136    | 117    | 104    | 98      | 95      | 105     | NA      | 28      | 21      | 14      |
| Marlin                        | 1,193  | 1,124  | 1,238  | 1,455   | 1,467   | 1,607   | 1,639   | 2,097   | 2,120   | 1,617   |
| Moonfish ( <i>opah</i> )      | 2,409  | 2,591  | 2,853  | 3,163   | 3,203   | 2,910   | 3,151   | NA      | 3,203   | 3,301   |
| Pomfrets ( <i>monchong</i> )  | 1,381  | 1,549  | 1,449  | 2,097   | 2,576   | 2,466   | 2,874   | 3,502   | 3,287   | 2,855   |
| Scad ( <i>opelu</i> )         | 1,198  | 1,251  | 964    | 1,181   | 1,147   | 1,128   | 108     | 1,173   | 996     | 998     |
| Snappers                      | 1,869  | 1,696  | 1,425  | 1,750   | 2,024   | 2,250   | 1,136   | 2,302   | 2,645   | 1,824   |
| Swordfish ( <i>mekajiki</i> ) | 7,336  | 7,303  | 6,669  | 6,693   | 4,493   | 5,405   | 4,629   | 4,813   | 5,823   | 3,699   |
| Tunas ( <i>aku</i> )          | 47,710 | 59,775 | 66,628 | 83,298  | 81,819  | 73,657  | 81,576  | 88,467  | 87,285  | 94,223  |
| Wahoo ( <i>ono</i> )          | 1,673  | 1,746  | 1,806  | 2,330   | 2,375   | 2,800   | 2,328   | 3,279   | 3,066   | 3,040   |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                               | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total                         | 26,913 | 28,074 | 29,295 | 31,053 | 32,453 | 33,480 | 34,625 | 35,055 | 37,166 | 35,497 |
| Finfish                       | 26,842 | 28,001 | 29,235 | 30,962 | 32,337 | 33,380 | 34,610 | 34,995 | 37,119 | 35,444 |
| Shellfish                     | 57     | 62     | 49     | 79     | 101    | 86     | 11     | 52     | 39     | 47     |
| Other                         | 15     | 10     | 11     | 13     | 15     | 13     | 4      | 8      | 8      | 6      |
| <b>Key Species</b>            |        |        |        |        |        |        |        |        |        |        |
| Dolphinfish                   | 1,287  | 1,518  | 1,423  | 1,746  | 1,515  | 1,689  | 1,132  | 1,193  | 954    | 1,008  |
| Lobsters                      | 11     | 9      | 10     | 8      | 9      | 10     | NA     | 3      | 3      | 2      |
| Marlin ( <i>a'u</i> )         | 1,033  | 878    | 916    | 800    | 948    | 1,220  | 1,440  | 1,302  | 1,544  | 1,329  |
| Moonfish ( <i>opah</i> )      | 1,884  | 1,824  | 1,564  | 1,549  | 2,072  | 2,004  | 2,067  | NA     | 1,812  | 2,327  |
| Pomfrets                      | 627    | 593    | 427    | 731    | 1,142  | 1,243  | 1,339  | 1,166  | 980    | 930    |
| Scad ( <i>opelu</i> )         | 405    | 460    | 323    | 383    | 361    | 356    | 36     | 368    | 306    | 299    |
| Snappers                      | 393    | 346    | 272    | 311    | 363    | 376    | 181    | 387    | 427    | 271    |
| Swordfish ( <i>mekajiki</i> ) | 3,881  | 3,153  | 2,592  | 2,381  | 1,674  | 2,480  | 2,044  | 1,640  | 2,561  | 1,744  |
| Tunas ( <i>aku</i> )          | 14,594 | 16,706 | 18,519 | 20,147 | 20,900 | 20,296 | 22,932 | 23,507 | 25,028 | 23,913 |
| Wahoo ( <i>ono</i> )          | 605    | 600    | 564    | 652    | 744    | 1,056  | 993    | 1,144  | 973    | 1,148  |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                                 | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015 | 2016 | 2017 | 2018 |
|---------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| Dolphinfish ( <i>mahimahi</i> ) | 2.22  | 2.18  | 3.03  | 3.04  | 2.73  | 2.61  | 3.03 | 3.78 | 3.62 | 3.46 |
| Lobsters ( <i>ula</i> )         | 12.37 | 12.36 | 10.39 | 11.84 | 10.71 | 10.21 | NA   | 8.56 | 6.48 | 8.97 |
| Marlin ( <i>a'u</i> )           | 1.16  | 1.28  | 1.35  | 1.82  | 1.55  | 1.32  | 1.14 | 1.61 | 1.37 | 1.22 |
| Moonfish ( <i>opah</i> )        | 1.28  | 1.42  | 1.82  | 2.04  | 1.55  | 1.45  | 1.52 | NA   | 1.77 | 1.42 |
| Pomfrets ( <i>monchong</i> )    | 2.20  | 2.61  | 3.39  | 2.87  | 2.25  | 1.98  | 2.15 | 3.00 | 3.35 | 3.07 |
| Scad ( <i>opelu</i> )           | 2.95  | 2.72  | 2.98  | 3.08  | 3.18  | 3.17  | 2.99 | 3.19 | 3.25 | 3.34 |
| Snappers                        | 4.75  | 4.90  | 5.24  | 5.63  | 5.57  | 5.99  | 6.27 | 5.95 | 6.20 | 6.73 |
| Swordfish ( <i>mekajiki</i> )   | 1.89  | 2.32  | 2.57  | 2.81  | 2.68  | 2.18  | 2.26 | 2.93 | 2.27 | 2.12 |
| Tunas ( <i>aku</i> )            | 3.27  | 3.58  | 3.60  | 4.13  | 3.91  | 3.63  | 3.56 | 3.76 | 3.49 | 3.94 |
| Wahoo ( <i>ono</i> )            | 2.77  | 2.91  | 3.20  | 3.57  | 3.19  | 2.65  | 2.34 | 2.87 | 3.15 | 2.65 |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Hawai'i Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | NA    | NA      | NA      | NA          |
|                              | Private Boat | 989   | 154,153 | 43,266  | 79,754      |
|                              | Shore        | 1,911 | 240,086 | 78,303  | 138,695     |
| Total Durable Expenditures   |              | NA    | NA      | NA      | NA          |
| Total State Economic Impacts |              | 2,900 | 394,240 | 121,569 | 218,448     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | NA                | Fishing Tackle             | NA                         |
| Private Boat                                    | 127,893           | Other Equipment            | NA                         |
| Shore   | 197,516           | Boat Expenses              | NA                         |
| Total   | 325,409           | Vehicle Expenses           | NA                         |
|   |                   | Second Home Expenses       | NA                         |
|   |                   | Total Durable Expenditures | NA                         |
| Total State Trip and Durable Goods Expenditures |                   |                            | 325,409                    |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|              | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire     | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| Private Boat | 441   | 484   | 224   | 325   | 297   | 324   | 273   | 235   | 261   | 670   |
| Shore        | 1,722 | 1,907 | 1,158 | 1,195 | 1,216 | 1,051 | 1,158 | 790   | 1,019 | 2,750 |
| Total Trips  | 2,163 | 2,390 | 1,382 | 1,519 | 1,513 | 1,374 | 1,431 | 1,024 | 1,280 | 3,421 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|  |   | 2009  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016 | 2017  | 2018  |
|--|---|-------|------|------|------|------|------|-------|------|-------|-------|
| Bigeye ( <i>akule</i> ) and mackerel ( <i>opelu</i> ) scad | H | 1,102 | 840  | 662  | 608  | 889  | 899  | 1,245 | 690  | 1,172 | 4,043 |
|  | R | 0     | 0    | 0    | 0    | 2    | 0    | < 1   | 4    | 7     | 2     |
| Blue marlin ( <i>a'u</i> )                                 | H | 3     | 1    | 2    | 3    | 4    | 3    | 5     | 2    | 4     | 13    |
|  | R | < 1   | 0    | 0    | 0    | 0    | < 1  | 0     | 0    | < 1   | 5     |
| Deep 7 bottom-fish   | H | < 1   | 1    | < 1  | 1    | 2    | 2    | < 1   | < 1  | NA    | 2     |
|  | R | 0     | 0    | 0    | 0    | 0    | 0    | 0     | 0    | NA    | 0     |
| Dolphinfish ( <i>mahimahi</i> )                            | H | 103   | 164  | 63   | 163  | 94   | 92   | 78    | 44   | 47    | 216   |
|  | R | 0     | 0    | 0    | 0    | 0    | < 1  | 0     | < 1  | < 1   | 2     |
| Goatfishes   | H | 712   | 270  | 173  | 158  | 873  | 537  | 1,052 | 246  | 420   | 2,037 |
|  | R | 7     | 18   | 13   | 13   | 3    | 22   | 15    | 16   | 18    | 69    |
| Jacks (trevallies and other jacks)                         | H | 123   | 140  | 99   | 110  | 144  | 156  | 170   | 112  | 115   | 202   |
|  | R | 85    | 126  | 59   | 129  | 126  | 263  | 319   | 122  | 154   | 413   |
| Other snappers   | H | 147   | 340  | 113  | 195  | 152  | 220  | 119   | 119  | 126   | 336   |
|  | R | 24    | 25   | 14   | 15   | 10   | 3    | 9     | 14   | 10    | 19    |
| Skipjack tuna ( <i>aku</i> )                               | H | 230   | 289  | 125  | 197  | 380  | 199  | 268   | 88   | 113   | 213   |
|  | R | 0     | 0    | < 1  | 0    | 0    | 0    | < 1   | 2    | 2     | 6     |
| Wahoo ( <i>ono</i> )                                       | H | 61    | 41   | 15   | 32   | 37   | 43   | 55    | 45   | 32    | 127   |
|  | R | 0     | 0    | 0    | 0    | 0    | < 1  | < 1   | < 1  | 0     | 0     |
| Yellowfin tuna ( <i>'ahi</i> )                             | H | 198   | 302  | 141  | 182  | 150  | 220  | 292   | 85   | 82    | 215   |
|  | R | 1     | 1    | 0    | 0    | 0    | < 1  | 1     | < 1  | 0     | 6     |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.



## 2017 Hawai'i State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 111,003 (0.4%)      | 32,800 (0.4%)   | 544,056 (0.4%) | 24.4 (0.4%)                  | 47.4 (0.5%)                         | 89.3                              | 3.93  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product   | Firms    | 7     | 11    | 14    | 14    | 16    | 14    | 12    | 12    | 10    |
| prep. & packaging | Receipts | 712   | 741   | 866   | 965   | 821   | 1,048 | 1,271 | 1,071 | 717   |
| Seafood sales,    | Firms    | 35    | 37    | 39    | 42    | 40    | 38    | 39    | 31    | 27    |
| retail            | Receipts | 3,666 | 4,124 | 3,558 | 4,086 | 3,764 | 3,727 | 4,053 | 4,025 | 2,106 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product   | Establishments | 1      | 1      | 1      | 2      | 2      | 2      | 2      | 2      | 3      |
| prep. & packaging | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
|                   | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
| Seafood sales,    | Establishments | 38     | 37     | 40     | 33     | 32     | 30     | 30     | 30     | 32     |
| wholesale         | Employees      | 538    | 531    | 538    | 483    | 542    | 567    | 639    | 697    | 621    |
|                   | Payroll        | 19,347 | 19,290 | 19,416 | 19,413 | 20,039 | 21,369 | 24,477 | 26,323 | 22,856 |
| Seafood sales,    | Establishments | 25     | 24     | 25     | 24     | 25     | 26     | 25     | 22     | 21     |
| retail            | Employees      | 158    | 177    | 187    | 303    | 318    | 305    | 293    | 313    | 308    |
|                   | Payroll        | 3,559  | 3,533  | 3,521  | 6,493  | 7,366  | 7,142  | 7,410  | 7,849  | 8,500  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|                   |                | 2009   | 2010    | 2011    | 2012   | 2013   | 2014   | 2015   | 2016    | 2017   |
|-------------------|----------------|--------|---------|---------|--------|--------|--------|--------|---------|--------|
| Ship and Boat     | Establishments | 13     | 15      | 15      | 18     | 18     | 14     | 14     | 15      | 15     |
| Building          | Employees      | ds     | ds      | ds      | ds     | ds     | ds     | 660    | 727     | 927    |
|                   | Payroll        | ds     | ds      | ds      | ds     | ds     | ds     | 46,560 | 45,051  | 66,270 |
| Deep Sea Freight  | Establishments | NA     | 1       | 1       | 2      | 1      | 1      | 1      | 1       | 3      |
| Transportation    | Employees      | NA     | ds      | ds      | ds     | ds     | ds     | ds     | 0       | 0      |
|                   | Payroll        | NA     | ds      | ds      | ds     | ds     | ds     | ds     | 0       | 0      |
| Deep Sea Pas-     | Establishments | 1      | 1       | 1       | 1      | 1      | 1      | 1      | 1       | NA     |
| senger Transpor-  | Employees      | ds     | ds      | ds      | ds     | ds     | ds     | ds     | 0       | NA     |
| tation            | Payroll        | ds     | ds      | ds      | ds     | ds     | ds     | ds     | 0       | NA     |
| Coastal and Great | Establishments | 5      | 2       | 2       | 5      | 5      | 6      | 7      | 7       | 6      |
| Lakes Freight     | Employees      | 475    | ds      | ds      | 431    | ds     | ds     | 452    | 425     | 275    |
| Transportation    | Payroll        | 34,367 | ds      | ds      | 34,538 | ds     | ds     | 36,675 | 50,267  | 42,282 |
| Port and Harbor   | Establishments | 3      | 2       | 2       | 2      | 1      | 1      | 1      | NA      | NA     |
| Operations        | Employees      | ds     | ds      | ds      | ds     | ds     | ds     | ds     | NA      | NA     |
|                   | Payroll        | 2,031  | ds      | ds      | ds     | ds     | ds     | ds     | NA      | NA     |
| Marine Cargo      | Establishments | 11     | 14      | 14      | 11     | 10     | 10     | 11     | 12      | 11     |
| Handling          | Employees      | 1,075  | 1,236   | 1,278   | 664    | 709    | 700    | 782    | 846     | 869    |
|                   | Payroll        | 87,833 | 109,059 | 109,134 | 54,309 | 61,651 | 66,034 | 83,408 | 115,582 | 86,285 |
| Navigational Ser- | Establishments | 11     | 11      | 8       | 8      | 9      | 9      | 11     | 11      | 8      |
| vices to Shipping | Employees      | 120    | 90      | 105     | 97     | 100    | 80     | 70     | 69      | 51     |
|                   | Payroll        | 5,258  | 5,113   | 5,310   | 5,567  | 6,518  | 5,416  | 4,463  | 5,697   | 4,304  |
| Marinas           | Establishments | 10     | 13      | 13      | 9      | 11     | 9      | 9      | 9       | 9      |
|                   | Employees      | 164    | 189     | 208     | 162    | 166    | 153    | 120    | 113     | 123    |
|                   | Payroll        | 4,368  | 5,362   | 5,237   | 3,779  | 4,003  | 3,304  | 3,412  | 3,421   | 3,756  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# New England Region

- Connecticut
- Maine
- Massachusetts
- New Hampshire
- Rhode Island



A fishing port at sunset in Gloucester, Massachusetts.  
Photo: NOAA Fisheries



## MANAGEMENT CONTEXT

The New England Region includes Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island. Federal fisheries in this region are managed by the New England Fishery Management Council (NEFMC) and NOAA Fisheries under nine fishery management plans (FMPs). Two of these FMPs, monkfish and spiny dogfish, are developed in conjunction with the Mid-Atlantic Fisheries Management Council (MAFMC). The MAFMC is the lead council for the Spiny Dogfish FMP; the NEFMC is the lead for the Monkfish FMP.

### New England Regional FMPs

- Northeast multi-species
- Sea scallops
- Monkfish (with the MAFMC)
- Atlantic herring
- Small mesh multi-species
- Spiny dogfish (with the MAFMC)
- Red crab
- Northeast skate complex
- Atlantic salmon

Fifteen of the stocks or stock complexes covered in these FMPs were listed as overfished in 2018: Atlantic cod (Georges Bank stock and Gulf of Maine stock), window-pane (Gulf of Maine/Georges Bank stock), witch flounder, yellowtail flounder (Cape Cod/Gulf of Maine stock, Georges Bank stock, and Southern New England/Mid-Atlantic stock), thorny skate (Gulf of Maine stock), Atlantic halibut, Atlantic salmon, Atlantic wolffish, ocean pout, winter flounder (Southern New England/Mid-Atlantic stock), red hake (Southern Georges Bank/Mid-Atlantic stock), and Atlantic mackerel (Gulf of Maine/Cape Hatteras stock).

Seven stocks/complexes were subject to overfishing in 2018: Atlantic cod (Georges Bank stock and Gulf of Maine stock), yellowtail flounder (Cape Cod/Gulf of Maine stock, Georges Bank stock, and Southern New England/Mid-Atlantic stock), red hake (Southern Georges Bank/Mid-Atlantic stock), and Atlantic mackerel (Gulf of Maine/Cape Hatteras stock).

Smooth skate (Gulf of Maine stock) was declared rebuilt in 2018. Atlantic mackerel (Gulf of Maine/Cape Hatteras stock) was added to the overfishing and overfished list in 2018, which was a first time determination (status previ-

ously unknown) in both cases.

## Catch Share Programs

Two catch share programs operate in the New England Region: 1) Northeast Multispecies Sectors; and 2) Northeast General Category Sea Scallop Individual Fishing Quota (IFQ) Program. The landings revenues for these programs totaled more than \$76 million (in inflation-adjusted 2018 dollars) in 2017. The following are descriptions of these catch share programs and their performance.

**Northeast Multispecies Sectors:** This program was developed between 2004 and 2006 and included two pilot sectors that operated with an allocation of Georges Bank cod. The program was expanded in 2010 to 17 sectors and approximately 55% of eligible, limited-access permit holders joined a sector. At the same time, annual catch limits were implemented for the first time and sharply reduced the available quota for fishermen. The 2017 key performance indicators of the program show that relative to the baseline period (the three-year period prior to implementation), quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per active vessel increased.

**Northeast General Category Sea Scallop IFQ Program:** This program began in 2010 with two primary objectives: 1) Control capacity and mortality in the General Category Scallop fishery, and 2) allow better and timelier integration of sea scallop assessment results in management. The 2017 key performance indicators of the program show that relative to the baseline period, quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per active vessel increased.

## COMMERCIAL FISHERIES — NEW ENGLAND REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section re-

ports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

### Key New England Region Commercial Species

- American lobster
- Atlantic herring
- Atlantic mackerel
- Bluefin tuna
- Cod and haddock
- Flounders
- Goosefish
- Quahog clam
- Sea scallop
- Squid
- American lobster

## Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this

case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry in Massachusetts generated the largest employment impacts in the New England region with 143,902 full- and part-time jobs. Massachusetts also generated the largest sales impacts (\$16 billion), value-added impacts (\$6.1 billion), and income impacts (\$3.9 billion).

## Landings Revenue

In 2018, landings revenue in the New England Region totaled \$1.4 billion, a 75% increase from 2009 (a 51% increase in real terms after adjusting for inflation) and a 7% increase from 2017. Landings revenue was highest in Massachusetts (\$630.9 million), followed by Maine (\$569 million).

Shellfish landings revenue accounted for 89% of all landings revenue. In 2018, American lobster (\$627.1 million), sea scallop (\$410.9 million), and squid (\$39 million) had the highest landings revenue in this region. Together, these top three species accounted for 79% of total landings revenue.

From 2009 to 2018, squid (134%, 101% in real terms), bluefin tuna (110%, 81% in real terms), and American lobster (106%, 77% in real terms) had the largest increases, while Atlantic mackerel (-62%, -68% in real terms), cod and haddock (-53%, -60% in real terms), and flounders (-21%, -32% in real terms) had the largest decreases. From 2017 to 2018, bluefin tuna (24%), squid (24%), and American lobster (11%) had the largest increases, while goosefish (-21%), flounders (-19%), and Atlantic herring (-14%) had the largest decreases.

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

**Commercial Revenue: Largest Increases***From 2009:*

- Squid (134%, 101% in real terms)
- Bluefin tuna (110%, 81% in real terms)
- American lobster (106%, 77% in real terms)

*From 2017:*

- Bluefin tuna (24%)
- Squid (24%)
- American lobster (11%)

**Commercial Revenue: Largest Decreases***From 2009:*

- Atlantic mackerel (-62%, -68%)
- Cod and haddock (-53%, -60%)
- Flounders (-21%, -32%)

*From 2017:*

- Goosefish (-21%)
- Flounders (-19%)
- Atlantic herring (-14%)

**Commercial Landings: Largest Increases***From 2009:*

- Bluefin tuna (116%)
- American lobster (48%)
- Squid (47%)

*From 2017:*

- Sea scallop (22%)
- Cod and haddock (19%)
- Bluefin tuna (16%)

**Commercial Landings: Largest Decreases***From 2009:*

- Atlantic mackerel (-70%)
- Atlantic herring (-56%)
- Flounders (-51%)

*From 2017:*

- Flounders (-21%)
- Atlantic herring (-11%)
- Goosefish (-8%)

**Landings**

In 2018, commercial fisheries landings in the New England Region totaled 552 million pounds. This represents a 13% decrease from 2009 and a 1% increase from 2017. American lobster contributed the highest landings volume in the region, accounting for 27% of total landing weight.

From 2009 to 2018, bluefin tuna (116%), American lobster (48%), and squid (47%) had the largest increases, while Atlantic mackerel (-70%), Atlantic herring (-56%), and flounders (-51%) had the largest decreases. From 2017 to 2018, sea scallop (22%), cod and haddock (19%), and bluefin tuna (16%) had the largest increases, while flounders (-21%), Atlantic herring (-11%), and goosefish (-8%) had the largest decreases.

**Prices**

In 2018, quahog clam (\$9.65 per pound) received the highest ex-vessel price in the region. Landings of Atlantic herring (\$0.24 per pound) had the lowest ex-vessel price. From 2009 to 2018, Atlantic herring (111%, 82% in real terms), quahog clam (74%, 50% in real terms), and flounders (62%, 39% in real terms) had the largest increases, while goosefish (-37%, -46% in real terms), cod and haddock (-8%, -21% in real terms), and bluefin tuna (-3%, -16% in real terms) had the largest decreases. From 2017 to 2018, squid (8%), bluefin tuna (7%), and quahog clam (5%) had the largest increases, while goosefish (-13%), sea scallop (-9%), and Atlantic mackerel (-8%) had the largest decreases.

**RECREATIONAL FISHERIES — NEW ENGLAND REGION**

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>3</sup>

<sup>3</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018.



**Key New England Recreational Species<sup>4</sup>**

- Atlantic cod
- Atlantic mackerel
- Bluefin tuna
- Bluefish
- Little tunny
- Porgies (scup)
- Striped bass
- Summer flounder
- Winter flounder
- Wrasses (tautog)

**Economic Impacts and Expenditures**

The economic contribution of recreational fishing activities in the New England Region is based on spending by recreational anglers.<sup>5</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>6</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

The greatest employment impacts from expenditures on saltwater recreational fishing in the New England Region were generated in Massachusetts (7,711 jobs), followed by Connecticut (5,118 jobs) and Rhode Island (3,963 jobs). The largest sales impacts were observed in Massachusetts (\$930.9 million), followed by Connecticut (\$605.9 million) and Rhode Island (\$419.1 million). The biggest income impacts were generated in Massachusetts (\$432.5 million), followed by Connecticut (\$263.1 million) and Rhode Island (\$178.6 million). The greatest value-added impacts were in Massachusetts (\$636.6 million), followed by Connecticut (\$422.5 million) and Rhode Island (\$277 million).

Expenditures for fishing trips and durable equipment across the New England Region in 2018 totaled \$2 billion. This total included \$1.5 billion in durable goods expenditures, with the largest portion coming from boat expenses (\$913.7 million).

**Participation**

In 2018, there were 887,291 recreational anglers who fished in the New England Region. This number represented a 36% decrease from 2009 and an 8% decrease from 2017. The anglers are categorized as either residents from coastal (94%) or non-coastal (6%) counties.

**Fishing Trips**

In 2018, recreational fishermen took 15.1 million fishing trips in the New England Region. This number represented a 37% decrease from 2009 and a 10% decrease from 2017. The largest proportions of trips were taken in the shore mode (59%) and private boat (39%). States with the highest number of recorded trips in the New England

<sup>4</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>5</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>6</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

Region were Massachusetts (6.7 million trips) and Connecticut (3.5 million trips).

## Harvest and Release Trends

Of the New England Region's key species and species groups, striped bass (18.1 million fish), porgies (scup) (16.8 million fish), and Atlantic mackerel (11.2 million fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, little tunny (253%), wrasses (tautog) (67%), and summer flounder (19%) had the largest increases, while bluefin tuna (-86%), winter flounder (-70%), and bluefish (-69%) had the largest decreases. From 2017 to 2018, little tunny (14%) and summer flounder (7%) had the largest increases, while bluefin tuna (-96%), bluefish (-55%), and winter flounder (-54%) had the largest decreases.

### Harvest and Release: Largest Increases

*From 2009:*

- Little tunny (253%)
- Wrasses (tautog) (67%)
- Summer flounder (19%)

*From 2017:*

- Little tunny (14%)
- Summer flounder (7%)

### Harvest and Release: Largest Decreases

*From 2009:*

- Bluefin tuna (-86%)
- Winter flounder (-70%)
- Bluefish (-69%)

*From 2017:*

- Bluefin tuna (-96%)
- Bluefish (-55%)
- Winter flounder (-54%)

## MARINE ECONOMY — NEW ENGLAND REGION

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>7</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>8</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

The Bureau of Labor Statistics suppressed the CFLQ value for Connecticut, Massachusetts, New Hampshire, and Rhode Island for 2017. Maine had a CFLQ value of 26.82.

In 2017, there were 378,178 employer establishments that operated throughout the entire New England Region (including marine and non-marine related establishments). These establishments employed 6.4 million workers and had a total annual payroll of \$386.4 billion. The combined gross state product of Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island was approximately \$1 trillion in 2017.<sup>9</sup>

## Seafood Sales and Processing

**Seafood Product Preparation and Packaging:** In 2017, the New England Region had 96 non-employer firms in the seafood product preparation and packaging sector. Annual receipts for these firms totaled \$10 million.<sup>10</sup> There were 63 employer firms in this sector (a 27% decrease from 2009). These establishments employed

<sup>7</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>8</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>9</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

<sup>10</sup> The Census Bureau suppressed number of firms and receipt data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.

2,700 workers and had a total annual payroll of \$151.2 million.<sup>11</sup> The greatest number of employer and non-employer establishments in this sector was in Massachusetts (76), followed by Maine (54) and Connecticut (19).

**Seafood Sales, Retail:** In 2017, there were 158 non-employer firms in seafood retail sales in the New England Region (a 4% decrease from 2009). Annual receipts for these firms totaled \$15.7 million. There were 218 employer firms in the seafood retail sector (an 8% decrease from 2009). These establishments employed 1,340 workers (a 20% increase from 2009) and had a total annual payroll of \$45.8 million. The greatest number of employer and non-employer establishments in this sector was in Massachusetts (154), followed by Maine (107) and Connecticut (59).

**Seafood Sales, Wholesale:** There were 327 employer firms in the seafood wholesale sector in the New England Region in 2017 (a 13% decrease from 2009). These establishments employed 3,301 workers (a 4% increase from 2009) and had a total annual payroll of \$180.6 million. The greatest number of employer and non-employer establishments in this sector was in Maine (146), followed by Massachusetts (133) and Rhode Island (22).

## Transportation Support and Marine Operations

Data for the transportation support and marine operations sector of the New England Region's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the ship and boat building sector in the New England Region accounted for \$466.3 million in payroll.

<sup>11</sup> The Census Bureau suppressed number of employees and payroll data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.



# Tables | New England Region





## New England Region | Commercial Fisheries

## 2018 Economic Impacts of the New England Seafood Industry (millions of dollars)

|               | Landings Revenue | With Imports |        |        |             | Without Imports |       |        |             |
|---------------|------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|               |                  | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Connecticut   | 17               | 3,583        | 720    | 147    | 248         | 707             | 49    | 17     | 23          |
| Maine         | 569              | 40,280       | 3,269  | 952    | 1,427       | 32,950          | 1,987 | 682    | 978         |
| Massachusetts | 631              | 143,902      | 16,047 | 3,941  | 6,132       | 70,370          | 3,112 | 1,163  | 1,572       |
| New Hampshire | 38               | 5,203        | 655    | 165    | 256         | 2,690           | 177   | 65     | 89          |
| Rhode Island  | 105              | 7,173        | 952    | 233    | 368         | 3,773           | 250   | 92     | 128         |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009    | 2010    | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      |
|--------------------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total              | 776,875 | 952,596 | 1,088,613 | 1,172,644 | 1,143,716 | 1,192,298 | 1,235,228 | 1,305,970 | 1,271,127 | 1,359,891 |
| Finfish            | 160,387 | 173,283 | 197,490   | 228,533   | 187,043   | 174,728   | 165,152   | 159,579   | 151,960   | 138,070   |
| Shellfish          | 608,521 | 765,311 | 878,198   | 930,713   | 942,884   | 1,003,266 | 1,059,832 | 1,130,904 | 1,105,874 | 1,206,394 |
| Other              | 7,967   | 14,002  | 12,926    | 13,398    | 13,789    | 14,304    | 10,244    | 15,488    | 13,293    | 15,426    |
| <b>Key Species</b> |         |         |           |           |           |           |           |           |           |           |
| American lobster   | 305,051 | 397,817 | 418,118   | 426,233   | 456,652   | 563,255   | 618,839   | 667,261   | 563,962   | 627,114   |
| Atlantic herring   | 24,459  | 21,009  | 24,753    | 28,549    | 31,381    | 27,947    | 24,280    | 28,613    | 26,560    | 22,798    |
| Atlantic mackerel  | 7,892   | 3,459   | 295       | 3,480     | 1,738     | 3,111     | 3,355     | 3,149     | 3,390     | 2,974     |
| Bluefin tuna       | 4,448   | 8,470   | 9,258     | 8,388     | 3,649     | 6,108     | 7,716     | 11,932    | 7,554     | 9,344     |
| Cod and haddock    | 38,751  | 49,698  | 48,747    | 29,697    | 16,288    | 20,307    | 18,897    | 19,189    | 16,355    | 18,107    |
| Flounders          | 27,707  | 27,951  | 31,178    | 35,616    | 32,560    | 31,116    | 29,506    | 28,335    | 26,835    | 21,800    |
| Goosefish          | 14,325  | 14,064  | 19,791    | 19,675    | 13,575    | 14,101    | 14,628    | 15,042    | 15,300    | 12,147    |
| Quahog clam        | 8,983   | 9,713   | 8,317     | 9,276     | 9,077     | 9,922     | 11,223    | 11,935    | 11,568    | 12,580    |
| Sea scallop        | 209,161 | 266,305 | 353,106   | 389,980   | 366,305   | 297,793   | 287,478   | 305,566   | 372,156   | 410,926   |
| Squid              | 16,696  | 14,788  | 22,889    | 18,187    | 15,547    | 21,412    | 24,264    | 41,861    | 31,539    | 39,011    |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 632,714 | 568,078 | 589,531 | 631,204 | 609,941 | 632,873 | 584,263 | 565,178 | 547,645 | 551,997 |
| Finfish            | 409,948 | 319,096 | 336,104 | 358,539 | 341,108 | 355,520 | 319,164 | 285,849 | 264,936 | 244,097 |
| Shellfish          | 213,177 | 233,606 | 235,585 | 253,169 | 246,166 | 263,458 | 256,378 | 271,042 | 274,117 | 281,999 |
| Other              | 9,589   | 15,376  | 17,843  | 19,496  | 22,668  | 13,894  | 8,722   | 8,287   | 8,592   | 25,901  |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 99,155  | 116,035 | 125,215 | 149,134 | 149,275 | 147,169 | 146,379 | 158,832 | 136,338 | 147,023 |
| Atlantic herring   | 210,784 | 141,955 | 174,291 | 190,558 | 203,673 | 197,908 | 171,779 | 135,156 | 104,578 | 93,100  |
| Atlantic mackerel  | 39,398  | 16,904  | 913     | 9,680   | 9,049   | 12,934  | 10,140  | 12,080  | 12,488  | 11,958  |
| Bluefin tuna       | 772     | 1,201   | 1,085   | 914     | 523     | 970     | 1,502   | 1,664   | 1,437   | 1,665   |
| Cod and haddock    | 32,525  | 39,249  | 30,090  | 14,671  | 9,042   | 15,133  | 15,257  | 14,237  | 13,932  | 16,569  |
| Flounders          | 16,252  | 14,564  | 17,950  | 18,408  | 16,367  | 14,270  | 12,510  | 9,143   | 10,048  | 7,902   |
| Goosefish          | 14,260  | 12,378  | 14,699  | 16,406  | 14,320  | 14,557  | 15,272  | 15,984  | 21,072  | 19,314  |
| Quahog clam        | 1,615   | 1,782   | 1,513   | 1,570   | 1,558   | 1,503   | 1,353   | 1,354   | 1,262   | 1,303   |
| Sea scallop        | 31,601  | 32,987  | 35,339  | 39,251  | 32,093  | 23,470  | 23,343  | 24,918  | 36,503  | 44,435  |
| Squid              | 28,014  | 21,722  | 27,909  | 16,155  | 14,576  | 28,783  | 23,698  | 39,377  | 35,851  | 41,235  |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                   | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017  | 2018 |
|-------------------|------|------|------|------|-------|-------|-------|-------|-------|------|
| American lobster  | 3.08 | 3.43 | 3.34 | 2.86 | 3.06  | 3.83  | 4.23  | 4.20  | 4.14  | 4.27 |
| Atlantic herring  | 0.12 | 0.15 | 0.14 | 0.15 | 0.15  | 0.14  | 0.14  | 0.21  | 0.25  | 0.24 |
| Atlantic mackerel | 0.20 | 0.20 | 0.32 | 0.36 | 0.19  | 0.24  | 0.33  | 0.26  | 0.27  | 0.25 |
| Bluefin tuna      | 5.76 | 7.05 | 8.54 | 9.18 | 6.98  | 6.29  | 5.14  | 7.17  | 5.26  | 5.61 |
| Cod and haddock   | 1.19 | 1.27 | 1.62 | 2.02 | 1.80  | 1.34  | 1.24  | 1.35  | 1.17  | 1.09 |
| Flounders         | 1.70 | 1.92 | 1.74 | 1.93 | 1.99  | 2.18  | 2.36  | 3.10  | 2.67  | 2.76 |
| Goosefish         | 1.00 | 1.14 | 1.35 | 1.20 | 0.95  | 0.97  | 0.96  | 0.94  | 0.73  | 0.63 |
| Quahog clam       | 5.56 | 5.45 | 5.50 | 5.91 | 5.82  | 6.60  | 8.29  | 8.81  | 9.17  | 9.65 |
| Sea scallop       | 6.62 | 8.07 | 9.99 | 9.94 | 11.41 | 12.69 | 12.32 | 12.26 | 10.20 | 9.25 |
| Squid             | 0.60 | 0.68 | 0.82 | 1.13 | 1.07  | 0.74  | 1.02  | 1.06  | 0.88  | 0.95 |

**2018 Economic Impacts of the New England Recreational Fishing Expenditures (thousands of dollars, trips)**

|               | Trips | #Jobs | Sales   | Income  | Value Added |
|---------------|-------|-------|---------|---------|-------------|
| Connecticut   | 3,543 | 5,118 | 605,892 | 263,055 | 422,538     |
| Maine         | 1,626 | 1,141 | 117,379 | 43,507  | 71,103      |
| Massachusetts | 6,705 | 7,711 | 930,950 | 432,451 | 636,576     |
| New Hampshire | 676   | 474   | 48,916  | 21,349  | 32,520      |
| Rhode Island  | 2,553 | 3,963 | 419,102 | 178,640 | 277,016     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 38,217            | Fishing Tackle             | 349,814                    |
| Private Boat                                    | 252,564           | Other Equipment            | 119,559                    |
| Shore   | 216,700           | Boat Expenses              | 913,663                    |
| Total   | 507,481           | Vehicle Expenses           | 110,671                    |
|   |                   | Second Home Expenses       | 1,448                      |
|   |                   | Total Durable Expenditures | 1,495,159                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 2,002,640                  |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Coastal       | 1,222 | 1,317 | 1,156 | 1,171 | 1,043 | 1,080 | 924   | 1,104 | 916  | 832  |
| Non-Coastal   | 165   | 169   | 131   | 144   | 100   | 99    | 95    | 94    | 53   | 55   |
| Total Anglers | 1,387 | 1,486 | 1,288 | 1,316 | 1,143 | 1,179 | 1,018 | 1,198 | 969  | 887  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 490    | 322    | 380    | 374    | 515    | 488    | 348    | 237    | 362    | 277    |
| Private     | 8,331  | 8,982  | 8,888  | 8,347  | 7,962  | 7,552  | 7,017  | 6,625  | 6,580  | 5,944  |
| Shore       | 15,053 | 15,550 | 14,004 | 13,818 | 11,272 | 10,690 | 9,581  | 10,620 | 9,808  | 8,883  |
| Total Trips | 23,874 | 24,855 | 23,271 | 22,538 | 19,749 | 18,730 | 16,945 | 17,482 | 16,750 | 15,104 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2,3</sup>**

|                   |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014  | 2015   | 2016   | 2017   | 2018   |
|-------------------|---|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|
| Atlantic cod      | H | 726    | 957    | 967    | 690    | 842    | 408   | 59     | 167    | 87     | 16     |
|                   | R | 1,670  | 2,350  | 1,684  | 991    | 1,799  | 1,168 | 1,074  | 1,787  | 2,226  | 1,173  |
| Atlantic mackerel | H | 6,150  | 16,156 | 15,554 | 10,443 | 9,986  | 8,440 | 15,579 | 16,577 | 17,301 | 9,452  |
|                   | R | 1,080  | 1,447  | 1,867  | 1,456  | 716    | 1,253 | 3,194  | 2,027  | 3,138  | 1,779  |
| Bluefin tuna      | H | 15     | 2      | 6      | 12     | < 1    | 14    | 2      | 12     | 14     | 3      |
|                   | R | 7      | < 1    | 11     | 5      | < 1    | < 1   | 7      | 7      | 55     | < 1    |
| Bluefish          | H | 1,658  | 3,279  | 1,799  | 4,744  | 5,720  | 2,383 | 1,293  | 1,676  | 1,601  | 614    |
|                   | R | 4,247  | 4,809  | 5,033  | 4,819  | 5,304  | 4,215 | 2,781  | 2,464  | 2,406  | 1,189  |
| Little tunny      | H | 6      | 6      | 0      | 18     | 3      | 15    | 54     | 70     | 28     | 16     |
|                   | R | 95     | 42     | 85     | 202    | 26     | 1,034 | 159    | 811    | 285    | 341    |
| Porgies (scup)    | H | 2,950  | 5,405  | 5,261  | 5,421  | 8,170  | 6,655 | 4,394  | 4,693  | 5,167  | 8,714  |
|                   | R | 7,890  | 9,386  | 7,161  | 8,249  | 7,298  | 6,481 | 5,325  | 9,253  | 9,928  | 8,048  |
| Striped bass      | H | 1,097  | 1,199  | 1,270  | 1,347  | 1,373  | 930   | 718    | 454    | 607    | 543    |
|                   | R | 10,285 | 7,808  | 6,872  | 6,635  | 10,837 | 8,942 | 8,971  | 11,905 | 23,539 | 17,602 |
| Summer flounder   | H | 281    | 568    | 663    | 592    | 844    | 878   | 686    | 556    | 342    | 389    |
|                   | R | 1,566  | 1,854  | 3,143  | 2,138  | 2,765  | 3,101 | 1,947  | 2,153  | 1,705  | 1,806  |
| Winter flounder   | H | 345    | 287    | 431    | 162    | 115    | 178   | 194    | 83     | 317    | 145    |
|                   | R | 338    | 187    | 305    | 73     | 53     | 134   | 214    | 296    | 133    | 61     |
| Wrasses (tautog)  | H | 820    | 798    | 294    | 849    | 1,087  | 1,199 | 873    | 730    | 995    | 483    |
|                   | R | 1,513  | 1,488  | 1,369  | 2,481  | 3,081  | 5,498 | 3,045  | 3,124  | 3,906  | 3,420  |

<sup>1</sup> Connecticut and Rhode Island anglers estimates are not available for the non-coastal mode.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.



# Tables | Connecticut



Table 1. Connecticut's population by county, 2010

| County    | Population |
|-----------|------------|
| Fairfield | 248,000    |
| Hartford  | 242,000    |
| Middlesex | 238,000    |
| New Haven | 235,000    |
| Tolland   | 147,000    |

Table 2. Connecticut's population by age group, 2010

| Age Group | Population |
|-----------|------------|
| 0-14      | 180,000    |
| 15-24     | 175,000    |
| 25-34     | 170,000    |
| 35-44     | 165,000    |
| 45-54     | 160,000    |
| 55-64     | 155,000    |
| 65-74     | 150,000    |
| 75-84     | 145,000    |
| 85+       | 140,000    |

Table 3. Connecticut's population by race and ethnicity, 2010

| Race and Ethnicity | Population |
|--------------------|------------|
| White              | 580,000    |
| Black              | 120,000    |
| Hispanic           | 110,000    |
| Asian              | 90,000     |
| Other              | 80,000     |

Table 4. Connecticut's population by education level, 2010

| Education Level       | Population |
|-----------------------|------------|
| Less than high school | 100,000    |
| High school graduate  | 200,000    |
| Some college          | 250,000    |
| Bachelor's degree     | 200,000    |
| Master's degree       | 50,000     |
| Doctorate             | 10,000     |

## Connecticut | Commercial Fisheries

## 2018 Economic Impacts of the Connecticut Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 3,583        | 720   | 147    | 248         | 707             | 49    | 17     | 23          |
| Commercial Harvesters              | 365          | 25    | 7      | 11          | 365             | 25    | 7      | 11          |
| Seafood Processors & Dealers       | 141          | 17    | 7      | 8           | 45              | 5     | 2      | 3           |
| Importers                          | 1,759        | 569   | 91     | 173         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 250          | 47    | 15     | 21          | 14              | 3     | 1      | 1           |
| Retail                             | 1,068        | 62    | 27     | 35          | 283             | 16    | 7      | 9           |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|           | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total     | 15,008 | 16,096 | 20,031 | 21,128 | 14,629 | 14,090 | 15,782 | 15,006 | 13,808 | 16,540 |
| Finfish   | 3,109  | 3,700  | 4,817  | 5,467  | 5,122  | 4,375  | 5,404  | 4,467  | 4,118  | 4,837  |
| Shellfish | 11,899 | 12,397 | 15,213 | 15,662 | 9,506  | 9,715  | 10,378 | 10,539 | 9,690  | 11,703 |
| Other     | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |

## Key Species

|                   |       |       |        |        |       |       |       |       |       |       |
|-------------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|
| American lobster  | 1,763 | 1,894 | 943    | 1,057  | 577   | 608   | 1,073 | 1,298 | 725   | 629   |
| Goosefish         | 591   | 564   | 976    | 1,040  | 1,022 | 510   | 680   | 468   | 360   | 334   |
| Loligo squid      | 260   | 473   | 694    | 1,861  | 1,257 | 1,354 | 1,631 | 2,199 | 996   | 2,246 |
| Other flounders   | 84    | 40    | 25     | 62     | 182   | 88    | 161   | 250   | 168   | 312   |
| Red hake          | 1,011 | 1,341 | 1,617  | 1,380  | 1,301 | 1,586 | 1,164 | 916   | 647   | 943   |
| Scups or porgies  | 196   | 272   | 408    | 837    | 705   | 573   | 819   | 779   | 559   | 631   |
| Sea scallop       | 8,952 | 9,458 | 13,007 | 12,005 | 7,220 | 7,219 | 7,039 | 5,881 | 7,205 | 7,727 |
| Silver hake       | 137   | 76    | 89     | 88     | 115   | 104   | 112   | 109   | 88    | 61    |
| Summer flounder   | 650   | 850   | 1,005  | 940    | 902   | 921   | 1,078 | 808   | 674   | 857   |
| Whelks and conchs | 796   | 452   | 482    | 625    | 295   | 347   | 487   | 997   | 585   | 1,019 |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|           | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016   | 2017   | 2018   |
|-----------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Total     | 6,569 | 6,699 | 7,403 | 8,940 | 7,957 | 7,510 | 9,390 | 12,148 | 10,170 | 11,473 |
| Finfish   | 4,155 | 4,410 | 5,218 | 5,756 | 5,874 | 5,208 | 7,110 | 9,234  | 8,325  | 8,619  |
| Shellfish | 2,414 | 2,288 | 2,186 | 3,184 | 2,082 | 2,302 | 2,280 | 2,914  | 1,845  | 2,854  |
| Other     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0      | 0      |

## Key Species

|                   |       |       |       |       |       |       |       |       |     |       |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|
| American lobster  | 412   | 442   | 199   | 248   | 127   | 127   | 205   | 254   | 130 | 111   |
| Goosefish         | 546   | 358   | 630   | 765   | 967   | 493   | 605   | 432   | 398 | 532   |
| Loligo squid      | 256   | 366   | 498   | 1,518 | 1,098 | 1,318 | 1,317 | 1,823 | 650 | 1,346 |
| Other flounders   | 53    | 24    | 16    | 36    | 138   | 57    | 81    | 105   | 71  | 155   |
| Red hake          | 1,881 | 1,973 | 2,041 | 1,848 | 1,647 | 2,037 | 1,320 | 948   | 746 | 1,010 |
| Scups or porgies  | 204   | 324   | 644   | 907   | 1,195 | 811   | 983   | 942   | 748 | 793   |
| Sea scallop       | 1,386 | 1,260 | 1,318 | 1,231 | 640   | 609   | 577   | 530   | 777 | 877   |
| Silver hake       | 310   | 176   | 158   | 185   | 173   | 167   | 146   | 164   | 133 | 138   |
| Summer flounder   | 251   | 308   | 401   | 315   | 284   | 253   | 287   | 191   | 135 | 177   |
| Whelks and conchs | 229   | 115   | 82    | 94    | 81    | 103   | 81    | 211   | 194 | 448   |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 |
|------------------|------|------|------|------|-------|-------|-------|-------|------|------|
| American lobster | 4.27 | 4.29 | 4.74 | 4.26 | 4.53  | 4.78  | 5.23  | 5.10  | 5.57 | 5.69 |
| Goosefish        | 1.08 | 1.58 | 1.55 | 1.36 | 1.06  | 1.04  | 1.12  | 1.08  | 0.90 | 0.63 |
| Loligo squid     | 1.01 | 1.29 | 1.39 | 1.23 | 1.15  | 1.03  | 1.24  | 1.21  | 1.53 | 1.67 |
| Other flounders  | 1.57 | 1.67 | 1.56 | 1.72 | 1.32  | 1.55  | 1.98  | 2.39  | 2.38 | 2.01 |
| Red hake         | 0.54 | 0.68 | 0.79 | 0.75 | 0.79  | 0.78  | 0.88  | 0.97  | 0.87 | 0.93 |
| Scups or porgies | 0.96 | 0.84 | 0.63 | 0.92 | 0.59  | 0.71  | 0.83  | 0.83  | 0.75 | 0.80 |
| Sea scallop      | 6.46 | 7.51 | 9.87 | 9.75 | 11.29 | 11.85 | 12.20 | 11.09 | 9.27 | 8.81 |
| Silver hake      | 0.44 | 0.43 | 0.56 | 0.47 | 0.66  | 0.62  | 0.77  | 0.66  | 0.66 | 0.44 |
| Summer flounder  | 2.59 | 2.76 | 2.50 | 2.98 | 3.18  | 3.63  | 3.76  | 4.23  | 5.01 | 4.83 |
| Whelks and conch | 3.47 | 3.94 | 5.91 | 6.67 | 3.65  | 3.37  | 6.04  | 4.72  | 3.01 | 2.27 |



**2018 Economic Impacts of Connecticut Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 58    | 6,434   | 2,529   | 4,164       |
|                              | Private Boat | 377   | 48,290  | 20,275  | 36,664      |
|                              | Shore        | 409   | 46,189  | 19,961  | 36,619      |
| Total Durable Expenditures   |              | 4,274 | 504,979 | 220,290 | 345,091     |
| Total State Economic Impacts |              | 5,118 | 605,892 | 263,055 | 422,538     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 4,423             | Fishing Tackle             | 101,162                    |
| Private Boat                                    | 57,655            | Other Equipment            | 27,310                     |
| Shore   | 44,976            | Boat Expenses              | 294,101                    |
| Total   | 107,054           | Vehicle Expenses           | 21,559                     |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 444,133                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 551,187                    |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 438  | 402  | 420  | 397  | 198  | 209  | 252  | 297  | 296  | 292  |
| Non-Coastal   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Out-of-State  | 93   | 112  | 98   | 67   | 43   | 64   | 57   | 88   | 102  | 96   |
| Total Anglers | 531  | 514  | 518  | 464  | 240  | 273  | 309  | 385  | 398  | 389  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 43    | 42    | 45    | 27    | 64    | 62    | 77    | 38    | 36    | 38    |
| Private     | 1,567 | 1,807 | 1,688 | 1,776 | 1,730 | 1,693 | 1,576 | 1,629 | 1,337 | 1,422 |
| Shore       | 1,777 | 1,847 | 1,746 | 1,931 | 1,712 | 1,885 | 2,192 | 2,563 | 2,565 | 2,083 |
| Total Trips | 3,388 | 3,696 | 3,479 | 3,734 | 3,506 | 3,641 | 3,844 | 4,230 | 3,937 | 3,543 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                  |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Atlantic cod     | H | NA    | NA    | NA    | 2     | NA    | NA    | NA    | 19    | 2     | 2     |
|                  | R | NA    | NA    | NA    | 0     | NA    | NA    | NA    | 12    | < 1   | < 1   |
| Bluefish         | H | 564   | 1,482 | 697   | 1,399 | 3,476 | 1,179 | 501   | 554   | 586   | 312   |
|                  | R | 654   | 1,552 | 1,958 | 1,495 | 1,594 | 1,062 | 890   | 818   | 1,763 | 505   |
| Hickory shad     | H | 0     | 4     | 65    | 61    | 15    | 92    | 0     | 36    | 19    | 2     |
|                  | R | 1     | 0     | 0     | 0     | 4     | 29    | 7     | 40    | 22    | 40    |
| Little tunny     | H | 0     | 2     | 0     | < 1   | NA    | 2     | 0     | < 1   | 14    | 3     |
|                  | R | 68    | 15    | 20    | 105   | NA    | 17    | 3     | 45    | 50    | 158   |
| Porgies (scup)   | H | 767   | 2,217 | 1,940 | 1,840 | 1,879 | 1,189 | 1,198 | 1,352 | 1,695 | 3,071 |
|                  | R | 2,484 | 2,305 | 1,170 | 2,052 | 2,775 | 2,729 | 1,814 | 3,288 | 4,646 | 3,029 |
| Striped bass     | H | 100   | 170   | 91    | 137   | 270   | 132   | 141   | 63    | 95    | 85    |
|                  | R | 2,427 | 1,416 | 1,571 | 892   | 2,312 | 740   | 1,761 | 1,208 | 4,994 | 7,514 |
| Summer flounder  | H | 62    | 73    | 99    | 135   | 529   | 281   | 252   | 338   | 121   | 153   |
|                  | R | 614   | 801   | 778   | 650   | 1,684 | 1,544 | 1,075 | 1,409 | 811   | 877   |
| White perch      | H | 135   | NA    | 0     | 50    | 0     | 9     | < 1   | 22    | 114   | 0     |
|                  | R | 144   | NA    | 2     | 115   | 6     | 26    | < 1   | 29    | 5     | 37    |
| Winter flounder  | H | 20    | 39    | 44    | 52    | 0     | 1     | 45    | 1     | < 1   | 2     |
|                  | R | 9     | 33    | 2     | 29    | 8     | 1     | 83    | 7     | < 1   | < 1   |
| Wrasses (tautog) | H | 357   | 274   | 42    | 411   | 307   | 516   | 389   | 312   | 218   | 75    |
|                  | R | 337   | 576   | 72    | 1,287 | 1,276 | 2,908 | 1,260 | 1,809 | 1,472 | 1,014 |

<sup>1</sup> 'NA' = not available.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

**2017 Connecticut State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 281,453 (1.1%)      | 89,574 (1.1%)   | 1,536,858 (1.2%) | 95.8 (1.4%)                  | 139 (1.3%)                          | 266                               | ds  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)**

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 17    | 17    | 14    | 13    | 25    | 26    | 25    | 22    | 19    |
|                                   | Receipts | 2,550 | 1,518 | 1,066 | 882   | 3,058 | 3,969 | 2,692 | 1,635 | 1,397 |
| Seafood sales, retail             | Firms    | 23    | 25    | 21    | 21    | 20    | 18    | 19    | 33    | 26    |
|                                   | Receipts | 2,142 | 2,473 | 2,165 | 1,388 | 1,543 | 1,655 | 1,813 | 3,965 | 2,520 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|                                   |                | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015   | 2016   | 2017  |
|-----------------------------------|----------------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| Seafood product prep. & packaging | Establishments | 2     | 2     | 2     | 1     | 1     | 1     | 1      | NA     | NA    |
|                                   | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | ds     | NA     | NA    |
|                                   | Payroll        | ds    | ds    | ds    | ds    | ds    | ds    | ds     | NA     | NA    |
| Seafood sales, wholesale          | Establishments | 25    | 23    | 24    | 16    | 17    | 19    | 20     | 18     | 17    |
|                                   | Employees      | 212   | 216   | 212   | 187   | 178   | 172   | 211    | 158    | 153   |
|                                   | Payroll        | 8,842 | 9,219 | 9,224 | 8,237 | 7,920 | 8,174 | 20,558 | 18,205 | 6,966 |
| Seafood sales, retail             | Establishments | 36    | 39    | 37    | 37    | 36    | 35    | 34     | 32     | 33    |
|                                   | Employees      | 205   | 204   | 171   | 233   | 218   | 244   | 230    | 261    | 230   |
|                                   | Payroll        | 5,551 | 5,563 | 4,824 | 6,349 | 6,344 | 7,380 | 7,533  | 8,742  | 8,264 |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 13     | 12     | 11     | 8      | 7      | 9      | 8      | 10     | 9      |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
| Deep Sea Freight Transportation                | Establishments | 12     | 10     | 11     | 14     | 11     | 11     | 11     | 12     | 10     |
|  | Employees      | 222    | 225    | 225    | 297    | 184    | ds     | 164    | 162    | 146    |
|  | Payroll        | 45,045 | 29,407 | 41,302 | 37,711 | 28,513 | 26,891 | 26,880 | 27,211 | 25,371 |
| Deep Sea Passenger Transportation              | Establishments | 1      | 1      | 1      | 1      | NA     | NA     | NA     | 1      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | NA     | NA     | NA     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | NA     | NA     | NA     | 0      | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 5      | 6      | 5      | 10     | 9      | 9      | 9      | 8      | 8      |
|  | Employees      | ds     | ds     | 95     | 256    | ds     | ds     | 216    | 232    | 298    |
|  | Payroll        | ds     | 8,148  | 7,856  | 32,789 | ds     | ds     | 27,698 | 34,550 | 37,814 |
| Port and Harbor Operations                     | Establishments | 8      | 6      | 5      | 4      | 5      | 5      | 5      | 4      | 3      |
|  | Employees      | 166    | 122    | 34     | ds     | ds     | ds     | 22     | 19     | 0      |
|  | Payroll        | 5,787  | 2,162  | 848    | 1,414  | ds     | ds     | 1,142  | 1,465  | 0      |
| Marine Cargo Handling                          | Establishments | 3      | 3      | 3      | NA     | 1      | 1      | 1      | 2      | 4      |
|  | Employees      | ds     | ds     | ds     | NA     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | ds     | ds     | ds     | NA     | ds     | ds     | ds     | 0      | 0      |
| Navigational Services to Shipping              | Establishments | 6      | 6      | 5      | 2      | 2      | 4      | 3      | 1      | 3      |
|  | Employees      | 5      | ds     | 5      | ds     | ds     | 3      | 2      | 0      | 4      |
|  | Payroll        | 696    | 242    | 898    | ds     | ds     | 185    | 159    | 0      | 175    |
| Marinas  | Establishments | 126    | 129    | 128    | 130    | 130    | 128    | 125    | 125    | 116    |
|  | Employees      | 1,261  | 1,284  | 1,283  | 1,257  | 1,265  | 1,174  | 1,153  | 1,193  | 1,167  |
|  | Payroll        | 58,065 | 58,877 | 59,851 | 60,803 | 63,211 | 59,054 | 59,526 | 62,504 | 51,217 |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.

# Tables | Maine



**2018 Economic Impacts of the Maine Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 40,280       | 3,269 | 952    | 1,427       | 32,950          | 1,987 | 682    | 978         |
| Commercial Harvesters              | 16,034       | 1,077 | 295    | 482         | 16,034          | 1,077 | 295    | 482         |
| Seafood Processors & Dealers       | 3,076        | 251   | 101    | 129         | 2,476           | 202   | 81     | 104         |
| Importers                          | 3,171        | 1,026 | 164    | 313         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 1,595        | 178   | 64     | 83          | 931             | 104   | 37     | 49          |
| Retail                             | 16,403       | 736   | 328    | 420         | 13,508          | 604   | 268    | 344         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 284,311 | 380,695 | 410,855 | 450,968 | 474,227 | 549,291 | 586,762 | 623,344 | 516,685 | 569,040 |
| Finfish            | 15,427  | 16,393  | 29,728  | 63,649  | 57,450  | 35,030  | 33,872  | 29,940  | 25,862  | 25,110  |
| Shellfish          | 260,917 | 350,301 | 368,259 | 373,965 | 404,477 | 500,012 | 544,175 | 577,993 | 477,538 | 528,567 |
| Other              | 7,967   | 14,002  | 12,868  | 13,354  | 12,301  | 14,249  | 8,715   | 15,410  | 13,285  | 15,363  |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 237,374 | 318,299 | 334,702 | 342,529 | 371,078 | 461,851 | 502,565 | 541,318 | 439,305 | 491,578 |
| Atlantic herring   | 7,867   | 8,966   | 14,396  | 14,494  | 15,492  | 16,212  | 13,526  | 19,488  | 17,768  | 16,701  |
| Bloodworms         | 6,196   | 5,893   | 5,847   | 5,191   | 5,644   | 6,085   | 6,333   | 6,585   | 6,444   | 6,659   |
| Blue mussel        | 2,192   | 2,074   | 1,969   | 1,930   | 2,341   | 2,153   | 2,458   | 2,422   | 2,126   | 2,738   |
| Cod and haddock    | 1,752   | 1,520   | 1,653   | 1,337   | 951     | 1,267   | 1,069   | 886     | 770     | 978     |
| Goosefish          | 526     | 393     | 578     | 1,059   | 773     | 566     | 616     | 459     | 623     | 675     |
| Ocean quahog clam  | 1,821   | 1,721   | 2,117   | 1,737   | 1,378   | 1,238   | 1,311   | 1,299   | 1,203   | 1,072   |
| Pollock            | 2,047   | 1,502   | 1,929   | 2,527   | 2,562   | 2,878   | 1,965   | 1,663   | 1,182   | 988     |
| Sea urchins        | NA      | 5,490   | 5,113   | 5,024   | 5,781   | 5,282   | NA      | 6,619   | 6,118   | 6,211   |
| Softshell clam     | 11,731  | 13,025  | 15,944  | 15,668  | 18,104  | 20,233  | 22,841  | 16,231  | 12,347  | 12,922  |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 177,086 | 198,469 | 244,852 | 259,895 | 263,325 | 257,873 | 230,483 | 234,860 | 201,564 | 227,845 |
| Finfish            | 72,219  | 64,932  | 102,834 | 100,141 | 105,782 | 111,254 | 92,768  | 86,930  | 72,913  | 72,449  |
| Shellfish          | 95,278  | 118,161 | 124,217 | 140,290 | 136,234 | 132,762 | 130,303 | 139,700 | 120,059 | 129,538 |
| Other              | 9,589   | 15,376  | 17,802  | 19,464  | 21,309  | 13,857  | 7,412   | 8,231   | 8,592   | 25,858  |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 81,124  | 96,244  | 104,957 | 127,464 | 128,016 | 124,941 | 122,686 | 132,750 | 112,170 | 121,227 |
| Atlantic herring   | 64,606  | 58,753  | 97,066  | 92,528  | 98,769  | 103,530 | 86,441  | 78,425  | 65,485  | 62,272  |
| Bloodworms         | 574     | 534     | 526     | 457     | 470     | 448     | 401     | 413     | 403     | 415     |
| Blue mussel        | 2,732   | 2,589   | 2,810   | 2,427   | 2,282   | 2,270   | 2,401   | 1,745   | 1,233   | 1,674   |
| Cod and haddock    | 1,401   | 869     | 835     | 536     | 400     | 685     | 658     | 489     | 449     | 747     |
| Goosefish          | 603     | 404     | 533     | 1,075   | 874     | 633     | 740     | 542     | 883     | 1,149   |
| Ocean quahog clam  | 556     | 549     | 645     | 698     | 557     | 438     | 416     | 367     | 346     | 295     |
| Pollock            | 3,040   | 1,640   | 2,325   | 2,666   | 2,227   | 2,319   | 1,381   | 1,049   | 848     | 818     |
| Sea urchins        | NA      | 2,592   | 2,407   | 1,904   | 1,988   | 1,958   | NA      | 2,058   | 1,956   | 2,045   |
| Softshell clam     | 1,910   | 2,087   | 2,383   | 2,260   | 2,297   | 2,080   | 1,891   | 1,560   | 1,411   | 1,468   |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| American lobster  | 2.93  | 3.31  | 3.19  | 2.69  | 2.90  | 3.70  | 4.10  | 4.08  | 3.92  | 4.06  |
| Atlantic herring  | 0.12  | 0.15  | 0.15  | 0.16  | 0.16  | 0.16  | 0.16  | 0.25  | 0.27  | 0.27  |
| Bloodworms        | 10.79 | 11.03 | 11.12 | 11.36 | 12.00 | 13.59 | 15.80 | 15.93 | 15.99 | 16.04 |
| Blue mussel       | 0.80  | 0.80  | 0.70  | 0.80  | 1.03  | 0.95  | 1.02  | 1.39  | 1.73  | 1.64  |
| Cod and haddock   | 1.25  | 1.75  | 1.98  | 2.50  | 2.38  | 1.85  | 1.62  | 1.81  | 1.72  | 1.31  |
| Goosefish         | 0.87  | 0.97  | 1.09  | 0.99  | 0.88  | 0.89  | 0.83  | 0.85  | 0.71  | 0.59  |
| Ocean quahog clam | 3.27  | 3.13  | 3.28  | 2.49  | 2.47  | 2.82  | 3.15  | 3.54  | 3.48  | 3.63  |
| Pollock           | 0.67  | 0.92  | 0.83  | 0.95  | 1.15  | 1.24  | 1.42  | 1.58  | 1.39  | 1.21  |
| Sea urchins       | NA    | 2.12  | 2.12  | 2.64  | 2.91  | 2.70  | NA    | 3.22  | 3.13  | 3.04  |
| Softshell clam    | 6.14  | 6.24  | 6.69  | 6.93  | 7.88  | 9.73  | 12.08 | 10.40 | 8.75  | 8.81  |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Maine Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income | Value Added |
|------------------------------|--------------|-------|---------|--------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 94    | 8,729   | 3,037  | 5,075       |
|                              | Private Boat | 122   | 14,425  | 4,839  | 8,144       |
|                              | Shore        | 495   | 52,640  | 19,293 | 31,620      |
| Total Durable Expenditures   |              | 430   | 41,586  | 16,338 | 26,265      |
| Total State Economic Impacts |              | 1,141 | 117,379 | 43,507 | 71,103      |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 5,289             | Fishing Tackle             | 12,548                     |
| Private Boat                                    | 13,851            | Other Equipment            | 4,565                      |
| Shore   | 38,777            | Boat Expenses              | 21,775                     |
| Total   | 57,917            | Vehicle Expenses           | 196                        |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 39,085                     |
| Total State Trip and Durable Goods Expenditures |                   |                            | 97,002                     |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 117  | 122  | 85   | 116  | 102  | 79   | 67   | 114  | 114  | 57   |
| Non-Coastal   | 12   | 9    | 7    | 6    | 4    | 5    | 4    | 13   | 10   | 2    |
| Out-of-State  | 324  | 159  | 107  | 126  | 129  | 129  | 74   | 110  | 145  | 71   |
| Total Anglers | 453  | 290  | 198  | 248  | 235  | 213  | 145  | 237  | 269  | 130  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 28    | 24    | 23    | 23    | 30    | 27    | 23    | 17    | 16    | 29    |
| Private     | 947   | 857   | 892   | 788   | 821   | 711   | 660   | 664   | 650   | 575   |
| Shore       | 1,663 | 1,177 | 856   | 958   | 1,045 | 1,239 | 1,022 | 1,268 | 1,082 | 1,022 |
| Total Trips | 2,637 | 2,058 | 1,771 | 1,768 | 1,896 | 1,976 | 1,705 | 1,948 | 1,748 | 1,626 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                   |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| American shad     | H | 2     | 0     | 0     | 0     | 0     | 6     | 6     | 4     | 4     | 4     |
|                   | R | 42    | 20    | 15    | 43    | 5     | 0     | 50    | 20    | 40    | 41    |
| Atlantic cod      | H | 77    | 21    | 98    | 48    | 110   | 70    | 3     | 4     | < 1   | < 1   |
|                   | R | 57    | 97    | 309   | 207   | 157   | 147   | 225   | 148   | 127   | 82    |
| Atlantic mackerel | H | 3,462 | 3,402 | 5,416 | 3,917 | 2,268 | 2,331 | 3,172 | 4,929 | 1,934 | 2,698 |
|                   | R | 625   | 643   | 1,215 | 739   | 214   | 603   | 488   | 963   | 215   | 154   |
| Blue shark        | H | 0     | NA    | 0     | 0     | 0     | 0     | 0     | 0     | NA    | 0     |
|                   | R | 3     | NA    | 24    | 7     | 36    | 20    | 35    | 2     | NA    | 10    |
| Bluefin tuna      | H | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
|                   | R | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Bluefish          | H | 10    | 26    | 2     | 22    | 67    | < 1   | 1     | < 1   | < 1   | NA    |
|                   | R | 58    | 22    | 10    | 144   | 65    | 0     | 0     | < 1   | 0     | NA    |
| Haddock           | H | 18    | 5     | 25    | 6     | 13    | 9     | 36    | 45    | 62    | 98    |
|                   | R | 2     | 10    | 8     | 30    | 94    | 212   | 122   | 166   | 182   | 88    |
| Pollock           | H | 143   | 133   | 206   | 122   | 267   | 371   | 194   | 82    | 123   | 139   |
|                   | R | 99    | 289   | 493   | 291   | 839   | 441   | 310   | 206   | 134   | 239   |
| Striped bass      | H | 146   | 37    | 49    | 31    | 73    | 86    | 14    | 14    | 22    | 16    |
|                   | R | 674   | 522   | 453   | 657   | 985   | 1,023 | 824   | 2,162 | 2,719 | 2,174 |
| Winter flounder   | H | 0     | NA    | NA    | NA    | 0     | 0     | NA    | 0     | 12    | NA    |
|                   | R | 23    | NA    | NA    | NA    | 2     | 17    | NA    | 47    | 0     | NA    |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> 'NA' = not available.



## 2017 Maine State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 116,299 (0.5%)      | 41,622 (0.5%)   | 513,745 (0.4%) | 22.3 (0.3%)                  | 35.6 (0.3%)                         | 62.5                              | 26.82   |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product   | Firms    | 63    | 59    | 51    | 51    | 36    | 37    | 32    | 31    | 32    |
| prep. & packaging | Receipts | 6,605 | 4,480 | 3,077 | 3,294 | 2,757 | 4,142 | 2,583 | 3,070 | 2,715 |
| Seafood sales,    | Firms    | 48    | 47    | 48    | 46    | 49    | 57    | 50    | 47    | 54    |
| retail            | Receipts | 4,882 | 5,835 | 4,608 | 4,492 | 4,200 | 4,664 | 5,848 | 7,586 | 5,814 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product   | Establishments | 25     | 27     | 28     | 29     | 28     | 30     | 32     | 27     | 22     |
| prep. & packaging | Employees      | 545    | 594    | 500    | 492    | 376    | 546    | 552    | 509    | 494    |
|                   | Payroll        | 10,427 | 12,851 | 10,353 | 12,011 | 11,797 | 18,713 | 18,506 | 18,774 | 16,933 |
| Seafood sales,    | Establishments | 164    | 164    | 152    | 136    | 150    | 142    | 146    | 150    | 146    |
| wholesale         | Employees      | 1,126  | 1,153  | 1,109  | 1,047  | 1,340  | 1,047  | 1,123  | 1,174  | 1,165  |
|                   | Payroll        | 37,687 | 39,915 | 38,412 | 40,734 | 46,782 | 40,392 | 42,337 | 49,043 | 52,014 |
| Seafood sales,    | Establishments | 49     | 51     | 51     | 48     | 51     | 54     | 60     | 59     | 53     |
| retail            | Employees      | 152    | 176    | 177    | 215    | 243    | 235    | 237    | 229    | 209    |
|                   | Payroll        | 4,481  | 5,126  | 5,108  | 6,902  | 7,618  | 7,558  | 9,601  | 9,162  | 9,890  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015    | 2016    | 2017    |
|-------------------|----------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Ship and Boat     | Establishments | 82     | 75     | 76     | 76     | 79     | 84     | 84      | 83      | 82      |
| Building          | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 6,654   | 7,091   | 6,787   |
|                   | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | 418,591 | 422,525 | 397,918 |
| Deep Sea Freight  | Establishments | 1      | 1      | NA     | NA     | NA     | NA     | NA      | NA      | NA      |
| Transportation    | Employees      | ds     | ds     | NA     | NA     | NA     | NA     | NA      | NA      | NA      |
|                   | Payroll        | ds     | ds     | NA     | NA     | NA     | NA     | NA      | NA      | NA      |
| Deep Sea Pas-     | Establishments | 1      | 1      | 1      | NA     | NA     | NA     | NA      | NA      | NA      |
| senger Transpor-  | Employees      | ds     | ds     | ds     | NA     | NA     | NA     | NA      | NA      | NA      |
| tation            | Payroll        | ds     | ds     | ds     | NA     | NA     | NA     | NA      | NA      | NA      |
| Coastal and Great | Establishments | 4      | 4      | 4      | 3      | 3      | 3      | 3       | 3       | 3       |
| Lakes Freight     | Employees      | 22     | 28     | ds     | ds     | ds     | ds     | 17      | 0       | 0       |
| Transportation    | Payroll        | 1,037  | 1,067  | 1,105  | ds     | ds     | ds     | 1,071   | 0       | 0       |
| Port and Harbor   | Establishments | 1      | 1      | 1      | 6      | 3      | 3      | 3       | 3       | 4       |
| Operations        | Employees      | ds     | ds     | ds     | ds     | 2      | ds     | 4       | 0       | 0       |
|                   | Payroll        | ds     | ds     | ds     | ds     | 130    | 113    | 142     | 0       | 0       |
| Marine Cargo      | Establishments | 3      | 2      | 2      | 1      | 2      | 2      | 2       | 4       | 3       |
| Handling          | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds      | 20      | 0       |
|                   | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds      | 1,857   | 0       |
| Navigational Ser- | Establishments | 14     | 13     | 13     | 13     | 14     | 14     | 13      | 13      | 15      |
| vices to Shipping | Employees      | 93     | 68     | 63     | 65     | 86     | 75     | 77      | 65      | 61      |
|                   | Payroll        | 5,369  | 4,928  | 4,776  | 4,730  | 5,660  | 5,243  | 4,752   | 3,852   | 4,477   |
| Marinas           | Establishments | 89     | 86     | 84     | 80     | 79     | 79     | 80      | 79      | 77      |
|                   | Employees      | 376    | 395    | 349    | 428    | 403    | 435    | 430     | 471     | 376     |
|                   | Payroll        | 14,654 | 14,699 | 15,426 | 17,102 | 17,476 | 19,694 | 20,400  | 22,618  | 18,912  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not available.

# Tables | Massachusetts



## Massachusetts | Commercial Fisheries

## 2018 Economic Impacts of the Massachusetts Seafood Industry (millions of dollars)

|                                    | With Imports |        |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 143,902      | 16,047 | 3,941  | 6,132       | 70,370          | 3,112 | 1,163  | 1,572       |
| Commercial Harvesters              | 12,727       | 1,145  | 368    | 538         | 12,727          | 1,145 | 368    | 538         |
| Seafood Processors & Dealers       | 15,262       | 2,305  | 879    | 1,143       | 3,446           | 521   | 198    | 258         |
| Importers                          | 30,030       | 9,719  | 1,558  | 2,963       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 5,355        | 991    | 324    | 440         | 1,291           | 239   | 78     | 106         |
| Retail                             | 80,527       | 1,887  | 812    | 1,049       | 52,906          | 1,208 | 518    | 670         |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 399,754 | 474,426 | 559,432 | 602,238 | 550,151 | 519,265 | 523,428 | 539,596 | 603,799 | 630,938 |
| Finfish            | 113,465 | 125,288 | 131,956 | 125,317 | 92,433  | 101,653 | 97,619  | 99,337  | 95,342  | 82,851  |
| Shellfish          | 286,289 | 349,139 | 427,418 | 476,877 | 456,230 | 417,556 | 424,279 | 440,181 | 508,456 | 548,042 |
| Other              | 0       | 0       | 58      | 44      | 1,489   | 55      | 1,530   | 78      | 0       | 46      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 42,732  | 50,384  | 53,365  | 53,360  | 58,663  | 68,336  | 78,290  | 82,383  | 81,193  | 88,844  |
| Atlantic herring   | 15,062  | 10,251  | 8,802   | 11,529  | 10,750  | 9,432   | 8,787   | 7,589   | 7,019   | 5,069   |
| Atlantic mackerel  | 4,528   | 1,487   | 137     | 654     | 1,223   | 2,421   | 1,952   | 2,600   | 2,775   | 1,579   |
| Cod and haddock    | 33,690  | 45,206  | 43,379  | 25,847  | 14,037  | 18,065  | 17,433  | 17,735  | 15,131  | 16,477  |
| Eastern oyster     | 6,415   | 8,227   | 9,080   | 12,072  | 13,896  | 19,575  | 22,679  | 22,512  | 28,387  | 28,387  |
| Flounders          | 19,715  | 20,048  | 22,124  | 25,191  | 20,780  | 18,183  | 18,118  | 18,317  | 18,505  | 14,762  |
| Goosefish          | 9,906   | 9,922   | 13,429  | 13,578  | 8,869   | 10,028  | 10,251  | 11,291  | 11,833  | 8,453   |
| Ocean quahog clam  | 10,710  | 8,974   | NA      | NA      | NA      | 9,814   | 9,063   | NA      | 10,719  | NA      |
| Other clams        | 10,074  | 11,971  | 14,424  | 20,026  | 23,675  | 22,221  | 22,769  | 24,017  | 25,056  | 25,364  |
| Sea scallop        | 197,208 | 252,292 | 330,954 | 364,902 | 334,221 | 271,373 | 264,741 | 281,191 | 331,278 | 373,829 |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 355,068 | 279,416 | 247,948 | 277,056 | 245,137 | 269,720 | 259,446 | 228,578 | 241,549 | 222,495 |
| Finfish            | 277,955 | 200,538 | 178,835 | 192,544 | 162,558 | 180,416 | 168,147 | 147,647 | 138,607 | 124,349 |
| Shellfish          | 77,113  | 78,878  | 69,073  | 84,480  | 81,220  | 89,267  | 89,989  | 80,875  | 102,942 | 98,122  |
| Other              | 0       | 0       | 41      | 32      | 1,359   | 37      | 1,310   | 57      | 0       | 24      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 11,790  | 12,772  | 13,385  | 14,486  | 15,159  | 15,313  | 16,450  | 17,785  | 16,493  | 17,697  |
| Atlantic herring   | 133,531 | 71,922  | 66,970  | 81,781  | 74,992  | 77,873  | 70,888  | 47,149  | 31,687  | 27,078  |
| Atlantic mackerel  | 30,199  | 12,156  | 515     | 4,131   | 7,279   | 10,755  | 7,059   | 10,556  | 10,403  | 7,534   |
| Cod and haddock    | 28,569  | 36,457  | 27,153  | 13,028  | 8,107   | 13,977  | 14,393  | 13,445  | 13,280  | 15,378  |
| Eastern oyster     | 159     | 213     | 227     | 308     | 328     | 444     | 504     | 494     | 618     | 651     |
| Flounders          | 12,389  | 11,170  | 13,707  | 14,264  | 11,541  | 9,050   | 8,412   | 6,144   | 7,456   | 6,178   |
| Goosefish          | 10,020  | 8,887   | 10,142  | 11,567  | 9,498   | 10,533  | 11,084  | 12,476  | 17,181  | 14,034  |
| Ocean quahog clam  | 18,691  | 15,645  | NA      | NA      | NA      | 13,422  | 13,340  | NA      | 14,190  | NA      |
| Other clams        | 5,488   | 9,052   | 12,514  | 18,378  | 21,787  | 20,195  | 19,567  | 20,390  | 19,246  | 17,895  |
| Sea scallop        | 29,769  | 31,160  | 33,093  | 36,722  | 29,253  | 21,316  | 21,491  | 22,844  | 32,488  | 40,382  |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| American lobster  | 3.62  | 3.94  | 3.99  | 3.68  | 3.87  | 4.46  | 4.76  | 4.63  | 4.92  | 5.02  |
| Atlantic herring  | 0.11  | 0.14  | 0.13  | 0.14  | 0.14  | 0.12  | 0.12  | 0.16  | 0.22  | 0.19  |
| Atlantic mackerel | 0.15  | 0.12  | 0.27  | 0.16  | 0.17  | 0.23  | 0.28  | 0.25  | 0.27  | 0.21  |
| Cod and haddock   | 1.18  | 1.24  | 1.60  | 1.98  | 1.73  | 1.29  | 1.21  | 1.32  | 1.14  | 1.07  |
| Eastern oyster    | 40.28 | 38.64 | 39.99 | 39.19 | 42.41 | 44.12 | 44.98 | 45.58 | 45.96 | 43.63 |
| Flounders         | 1.59  | 1.79  | 1.61  | 1.77  | 1.80  | 2.01  | 2.15  | 2.98  | 2.48  | 2.39  |
| Goosefish         | 0.99  | 1.12  | 1.32  | 1.17  | 0.93  | 0.95  | 0.92  | 0.90  | 0.69  | 0.60  |
| Ocean quahog clam | 0.57  | 0.57  | NA    | NA    | NA    | 0.73  | 0.68  | NA    | 0.76  | NA    |
| Other clams       | 1.84  | 1.32  | 1.15  | 1.09  | 1.09  | 1.10  | 1.16  | 1.18  | 1.30  | 1.42  |
| Sea scallop       | 6.62  | 8.10  | 10.00 | 9.94  | 11.43 | 12.73 | 12.32 | 12.31 | 10.20 | 9.26  |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Massachusetts Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|------------------------------|--------------|--------------|--------------|---------------|--------------------|
| Trip Impacts by Fishing Mode | For-Hire     | 268          | 29,399       | 11,433        | 18,819             |
|                              | Private Boat | 882          | 112,021      | 55,005        | 76,728             |
|                              | Shore        | 1,128        | 131,062      | 65,719        | 93,652             |
| Total Durable Expenditures   |              | 5,433        | 658,468      | 300,294       | 447,377            |
| Total State Economic Impacts |              | 7,711        | 930,950      | 432,451       | 636,576            |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 18,065                   | Fishing Tackle             | 148,463                           |
| Private Boat                                    | 146,424                  | Other Equipment            | 61,090                            |
| Shore   | 96,460                   | Boat Expenses              | 400,137                           |
| Total   | 260,950                  | Vehicle Expenses           | 70,677                            |
|   |                          | Second Home Expenses       | 572                               |
|   |                          | Total Durable Expenditures | 680,939                           |
| Total State Trip and Durable Goods Expenditures |                          |                            | 941,889                           |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal       | 489         | 586         | 490         | 502         | 546         | 582         | 428         | 476         | 350         | 335         |
| Non-Coastal   | 144         | 152         | 115         | 130         | 77          | 82          | 85          | 73          | 38          | 45          |
| Out-of-State  | 421         | 433         | 293         | 309         | 275         | 532         | 199         | 289         | 211         | 169         |
| Total Anglers | 1,054       | 1,171       | 897         | 941         | 898         | 1,196       | 711         | 837         | 599         | 550         |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 251         | 151         | 197         | 227         | 260         | 238         | 117         | 95          | 224         | 130         |
| Private     | 4,448       | 5,027       | 4,721       | 4,380       | 3,898       | 3,695       | 3,064       | 3,069       | 3,390       | 2,673       |
| Shore       | 8,253       | 8,980       | 8,544       | 7,614       | 5,967       | 4,875       | 4,102       | 4,080       | 4,161       | 3,903       |
| Total Trips | 12,952      | 14,158      | 13,462      | 12,221      | 10,125      | 8,808       | 7,282       | 7,244       | 7,775       | 6,705       |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|                   |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Atlantic bonito   | H | 12          | 4           | 15          | 12          | 0           | 31          | 12          | 1           | 3           | 24          |
|                   | R | 2           | 15          | 0           | < 1         | 2           | 42          | 13          | 13          | < 1         | 378         |
| Atlantic cod      | H | 474         | 782         | 697         | 486         | 544         | 252         | 5           | 56          | 48          | 5           |
|                   | R | 1,333       | 1,969       | 1,006       | 533         | 1,382       | 806         | 317         | 1,145       | 1,728       | 605         |
| Atlantic mackerel | H | 1,566       | 12,007      | 6,911       | 4,165       | 5,114       | 4,334       | 11,514      | 9,199       | 12,295      | 4,983       |
|                   | R | 315         | 744         | 261         | 403         | 417         | 524         | 2,385       | 684         | 2,689       | 1,414       |
| Bluefish          | H | 688         | 1,361       | 684         | 977         | 1,520       | 739         | 693         | 977         | 595         | 182         |
|                   | R | 3,064       | 3,060       | 1,877       | 1,808       | 1,644       | 2,888       | 479         | 1,059       | 528         | 532         |
| Haddock           | H | 361         | 318         | 123         | 189         | 189         | 153         | 74          | 741         | 1,465       | 504         |
|                   | R | 105         | 63          | 41          | 215         | 583         | 666         | 213         | 2,487       | 2,048       | 703         |
| Porgies (scup)    | H | 1,778       | 2,349       | 2,125       | 2,549       | 3,783       | 2,802       | 1,977       | 1,791       | 2,086       | 3,266       |
|                   | R | 4,193       | 5,687       | 4,506       | 4,527       | 2,854       | 2,302       | 1,906       | 3,004       | 3,419       | 3,223       |
| Striped bass      | H | 695         | 808         | 873         | 1,011       | 659         | 524         | 485         | 230         | 392         | 389         |
|                   | R | 5,989       | 5,090       | 4,036       | 3,629       | 4,670       | 6,425       | 4,471       | 6,299       | 12,866      | 5,377       |
| Summer flounder   | H | 91          | 149         | 184         | 233         | 80          | 256         | 213         | 106         | 65          | 67          |
|                   | R | 171         | 460         | 594         | 560         | 144         | 643         | 242         | 267         | 110         | 138         |
| Winter flounder   | H | 285         | 237         | 365         | 110         | 115         | 168         | 134         | 71          | 285         | 126         |
|                   | R | 292         | 134         | 299         | 35          | 40          | 101         | 113         | 230         | 125         | 52          |
| Wrasses (tautog)  | H | 66          | 154         | 173         | 96          | 240         | 444         | 188         | 74          | 636         | 78          |
|                   | R | 384         | 533         | 817         | 348         | 1,012       | 2,168       | 670         | 261         | 1,889       | 399         |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

2017 Massachusetts State Economy (% of national total)<sup>1</sup>

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 559,925 (2.2%)      | 179,828 (2.3%)  | 3,316,716 (2.6%) | 217 (3.2%)                   | 306 (3%)                            | 537                               | ds  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 22    | 27    | 36    | 25    | 28    | 33    | 38    | 38    | 40    |
|                                   | Receipts | 1,943 | 2,082 | 2,433 | 1,699 | 1,857 | 2,356 | 4,474 | 3,800 | 4,462 |
| Seafood sales, retail             | Firms    | 64    | 61    | 66    | 65    | 51    | 56    | 52    | 46    | 53    |
|                                   | Receipts | 7,686 | 6,287 | 7,640 | 5,213 | 3,842 | 5,782 | 5,154 | 4,566 | 5,153 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                                   |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|-----------------------------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Seafood product prep. & packaging | Establishments | 44      | 44      | 44      | 39      | 40      | 42      | 41      | 37      | 36      |
|                                   | Employees      | 2,396   | 2,159   | 2,214   | 1,638   | 1,755   | 1,819   | 1,948   | 1,967   | 2,153   |
|                                   | Payroll        | 119,282 | 107,635 | 112,399 | 74,541  | 87,153  | 99,445  | 108,090 | 108,850 | 134,273 |
| Seafood sales, wholesale          | Establishments | 144     | 149     | 141     | 140     | 142     | 130     | 129     | 128     | 133     |
|                                   | Employees      | 1,542   | 1,591   | 2,013   | 1,841   | 1,910   | 1,859   | 1,808   | 1,865   | 1,753   |
|                                   | Payroll        | 70,864  | 83,467  | 94,105  | 100,801 | 104,637 | 101,512 | 102,009 | 107,494 | 108,426 |
| Seafood sales, retail             | Establishments | 115     | 112     | 106     | 114     | 114     | 114     | 106     | 107     | 101     |
|                                   | Employees      | 542     | 584     | 576     | 576     | 708     | 647     | 641     | 690     | 657     |
|                                   | Payroll        | 15,261  | 16,495  | 16,037  | 15,776  | 18,304  | 19,516  | 20,201  | 21,909  | 21,734  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 38     | 37     | 37     | 40     | 41     | 43     | 39     | 38     | 34     |
|  | Employees      | 579    | 535    | 445    | 446    | 463    | 623    | 576    | 525    | 495    |
|  | Payroll        | 20,685 | 20,196 | 22,066 | 23,195 | 23,615 | 31,451 | 31,153 | 30,808 | 28,965 |
| Deep Sea Freight Transportation                | Establishments | 10     | 8      | 7      | 9      | 8      | 9      | 8      | 8      | 8      |
|  | Employees      | ds     | 313    | 381    | ds     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | 35,473 | 36,069 | 38,797 | ds     | ds     | ds     | ds     | 0      | 0      |
| Deep Sea Passenger Transportation              | Establishments | 1      | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
|  | Employees      | ds     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
|  | Payroll        | ds     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 12     | 12     | 10     | 14     | 8      | 12     | 12     | 10     | 7      |
|  | Employees      | 166    | ds     | ds     | ds     | 22     | 25     | 36     | 34     | 35     |
|  | Payroll        | 10,011 | ds     | ds     | 3,266  | 1,352  | 1,478  | 2,766  | 3,026  | 2,542  |
| Port and Harbor Operations                     | Establishments | 4      | 8      | 6      | 5      | 3      | 1      | 1      | 1      | NA     |
|  | Employees      | 66     | 86     | 95     | 35     | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | 1,323  | 2,662  | 3,035  | 1,519  | ds     | ds     | ds     | 0      | NA     |
| Marine Cargo Handling                          | Establishments | 2      | 2      | 2      | 4      | 3      | 3      | 2      | 2      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
| Navigational Services to Shipping              | Establishments | 11     | 9      | 9      | 8      | 11     | 9      | 8      | 10     | 16     |
|  | Employees      | 71     | 150    | 139    | 120    | 94     | 83     | 88     | 106    | 156    |
|  | Payroll        | 4,342  | 9,413  | 6,980  | 5,965  | 6,578  | 6,645  | 7,311  | 8,984  | 10,898 |
| Marinas  | Establishments | 177    | 175    | 176    | 172    | 178    | 177    | 178    | 175    | 176    |
|  | Employees      | 1,188  | 1,150  | 1,125  | 977    | 1,054  | 1,161  | 1,076  | 1,143  | 1,230  |
|  | Payroll        | 56,663 | 57,002 | 58,251 | 48,657 | 55,053 | 57,797 | 63,422 | 67,077 | 68,756 |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.



# Tables | New Hampshire



## New Hampshire | Commercial Fisheries

## 2018 Economic Impacts of the New Hampshire Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 5,203        | 655   | 165    | 256         | 2,690           | 177   | 65     | 89          |
| Commercial Harvesters              | 980          | 67    | 19     | 30          | 980             | 67    | 19     | 30          |
| Seafood Processors & Dealers       | 374          | 47    | 19     | 24          | 225             | 28    | 11     | 14          |
| Importers                          | 1,181        | 382   | 61     | 117         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 269          | 40    | 14     | 19          | 87              | 13    | 5      | 6           |
| Retail                             | 2,399        | 118   | 52     | 68          | 1,398           | 69    | 30     | 39          |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 17,670 | 20,521 | 23,427 | 23,191 | 20,127 | 23,239 | 27,458 | 33,246 | 34,995 | 38,321 |
| Finfish            | 5,563  | 5,114  | 6,131  | 5,550  | 2,859  | 1,855  | 2,517  | 2,485  | 3,126  | 3,047  |
| Shellfish          | 12,107 | 15,407 | 17,295 | 17,642 | 17,268 | 21,384 | 24,941 | 30,761 | 31,869 | 35,274 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| American lobster   | 11,919 | 14,836 | 16,343 | 17,169 | 16,602 | 20,751 | 24,544 | 30,372 | 31,723 | 35,106 |
| Atlantic cod       | 2,587  | 2,186  | 2,500  | 1,750  | 546    | 571    | 93     | 109    | 150    | 209    |
| Atlantic herring   | 271    | 375    | 208    | 349    | 232    | NA     | 586    | NA     | 827    | 436    |
| Flounder           | 140    | 103    | 102    | 217    | 106    | NA     | 156    | 191    | 269    | 198    |
| Goosefish          | 280    | 212    | 207    | 153    | 186    | NA     | 351    | 338    | 422    | 355    |
| Haddock            | 68     | 29     | 35     | 91     | 20     | 18     | 8      | 14     | 22     | 107    |
| Hake               | 215    | 237    | 445    | 475    | 373    | NA     | 261    | 270    | 186    | 278    |
| Pollock            | 1,283  | 839    | 1,355  | 1,224  | 1,133  | 860    | 356    | 207    | 189    | 284    |
| Sea scallop        | NA     | 3      | 26     | 143    | 296    | 345    | 398    | 284    | 64     | 154    |
| Spiny dogfish      | 557    | 291    | 451    | 419    | 94     | NA     | NA     | NA     | 178    | NA     |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013  | 2014  | 2015  | 2016  | 2017   | 2018  |
|--------------------|--------|--------|--------|--------|-------|-------|-------|-------|--------|-------|
| Total              | 13,441 | 11,624 | 12,226 | 12,069 | 8,228 | 6,010 | 9,924 | 7,038 | 10,623 | 9,132 |
| Finfish            | 10,095 | 7,011  | 7,124  | 7,500  | 3,970 | 1,203 | 5,171 | 1,082 | 4,991  | 3,015 |
| Shellfish          | 3,346  | 4,613  | 5,103  | 4,569  | 4,257 | 4,807 | 4,753 | 5,956 | 5,632  | 6,117 |
| Other              | 0      | 0      | 0      | 0      | 0     | 0     | 0     | 0     | 0      | 0     |
| <b>Key Species</b> |        |        |        |        |       |       |       |       |        |       |
| American lobster   | 2,987  | 3,648  | 3,919  | 4,229  | 3,818 | 4,375 | 4,722 | 5,782 | 5,514  | 6,083 |
| Atlantic cod       | 1,984  | 1,226  | 1,286  | 725    | 230   | 263   | 45    | 55    | 71     | 89    |
| Atlantic herring   | 3,120  | 2,830  | 1,514  | 2,391  | 1,579 | NA    | 3,999 | NA    | 2,829  | 1,511 |
| Flounder           | 87     | 58     | 70     | 133    | 61    | NA    | 97    | 86    | 119    | 98    |
| Goosefish          | 250    | 172    | 153    | 126    | 162   | NA    | 314   | 331   | 549    | 540   |
| Haddock            | 45     | 18     | 19     | 43     | 9     | 10    | 6     | 9     | 18     | 80    |
| Hake               | 423    | 322    | 587    | 1,136  | 393   | NA    | 309   | 330   | 267    | 288   |
| Pollock            | 2,023  | 1,041  | 1,732  | 1,049  | 982   | 629   | 270   | 98    | 108    | 186   |
| Sea scallop        | NA     | 0      | 3      | 12     | 25    | 27    | 31    | 24    | 5      | 12    |
| Spiny dogfish      | 2,073  | 1,207  | 1,643  | 1,788  | 508   | NA    | NA    | NA    | 858    | NA    |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010 | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| American lobster | 3.99 | 4.07 | 4.17  | 4.06  | 4.35  | 4.74  | 5.20  | 5.25  | 5.75  | 5.77  |
| Atlantic cod     | 1.30 | 1.78 | 1.94  | 2.41  | 2.38  | 2.17  | 2.09  | 1.97  | 2.11  | 2.36  |
| Atlantic herring | 0.09 | 0.13 | 0.14  | 0.15  | 0.15  | NA    | 0.15  | NA    | 0.29  | 0.29  |
| Flounder         | 1.61 | 1.78 | 1.46  | 1.63  | 1.74  | NA    | 1.61  | 2.21  | 2.27  | 2.01  |
| Goosefish        | 1.12 | 1.23 | 1.36  | 1.21  | 1.15  | NA    | 1.12  | 1.02  | 0.77  | 0.66  |
| Haddock          | 1.51 | 1.57 | 1.91  | 2.14  | 2.28  | 1.74  | 1.41  | 1.55  | 1.26  | 1.34  |
| Hake             | 0.51 | 0.74 | 0.76  | 0.42  | 0.95  | NA    | 0.85  | 0.82  | 0.70  | 0.96  |
| Pollock          | 0.63 | 0.81 | 0.78  | 1.17  | 1.15  | 1.37  | 1.32  | 2.12  | 1.74  | 1.53  |
| Sea scallop      | NA   | 8.82 | 10.35 | 11.68 | 11.93 | 12.68 | 12.83 | 12.02 | 13.17 | 13.19 |
| Spiny dogfish    | 0.27 | 0.24 | 0.27  | 0.23  | 0.19  | NA    | NA    | NA    | 0.21  | NA    |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of New Hampshire Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales  | Income | Value Added |
|------------------------------|--------------|-------|--------|--------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 74    | 7,132  | 2,728  | 4,313       |
|                              | Private Boat | 65    | 6,790  | 3,106  | 4,531       |
|                              | Shore        | 128   | 12,784 | 5,101  | 8,845       |
| Total Durable Expenditures   |              | 207   | 22,210 | 10,413 | 14,831      |
| Total State Economic Impacts |              | 474   | 48,916 | 21,349 | 32,520      |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 4,683             | Fishing Tackle             | 9,361                      |
| Private Boat                                    | 8,652             | Other Equipment            | 2,870                      |
| Shore   | 9,928             | Boat Expenses              | 10,551                     |
| Total   | 23,263            | Vehicle Expenses           | 1,099                      |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 23,882                     |
| Total State Trip and Durable Goods Expenditures |                   |                            | 47,145                     |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 67   | 46   | 56   | 58   | 68   | 50   | 54   | 69   | 24   | 39   |
| Non-Coastal   | 9    | 7    | 10   | 9    | 19   | 11   | 6    | 8    | 4    | 8    |
| Out-of-State  | 58   | 33   | 30   | 54   | 66   | 58   | 54   | 57   | 19   | 41   |
| Total Anglers | 134  | 86   | 96   | 121  | 153  | 120  | 115  | 134  | 48   | 88   |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016  | 2017 | 2018 |
|-------------|------|------|------|------|------|------|------|-------|------|------|
| For-Hire    | 108  | 65   | 76   | 55   | 114  | 110  | 82   | 38    | 51   | 38   |
| Private     | 313  | 313  | 341  | 375  | 404  | 395  | 407  | 438   | 430  | 299  |
| Shore       | 414  | 410  | 393  | 427  | 389  | 449  | 492  | 585   | 492  | 339  |
| Total Trips | 835  | 788  | 810  | 858  | 906  | 954  | 981  | 1,061 | 972  | 676  |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                                    |   | 2009  | 2010 | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Atlantic cod                       | H | 170   | 148  | 165   | 97    | 188   | 66    | 3     | 12    | 32    | < 1   |
|                                    | R | 273   | 247  | 333   | 248   | 259   | 209   | 499   | 423   | 370   | 482   |
| Atlantic mackerel                  | H | 1,122 | 746  | 3,227 | 2,360 | 2,537 | 1,768 | 880   | 2,431 | 3,031 | 1,753 |
|                                    | R | 141   | 60   | 391   | 312   | 51    | 125   | 315   | 362   | 232   | 208   |
| Bluefin tuna                       | H | < 1   | 0    | 0     | < 1   | NA    | NA    | NA    | NA    | NA    | < 1   |
|                                    | R | < 1   | < 1  | 3     | 0     | NA    | NA    | NA    | NA    | NA    | 0     |
| Bluefish                           | H | < 1   | 4    | 1     | 33    | 0     | 2     | 8     | < 1   | NA    | NA    |
|                                    | R | 13    | 3    | 3     | 16    | < 1   | 9     | 0     | 0     | NA    | NA    |
| Bottomfish, unidentified           | H | 0     | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
|                                    | R | 0     | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Haddock                            | H | 120   | 75   | 94    | 101   | 107   | 104   | 153   | 195   | 165   | 263   |
|                                    | R | 37    | 18   | 25    | 177   | 404   | 582   | 1,062 | 553   | 441   | 314   |
| Pollock                            | H | 57    | 135  | 186   | 119   | 228   | 268   | 149   | 213   | 258   | 87    |
|                                    | R | 59    | 197  | 243   | 282   | 469   | 459   | 1,273 | 294   | 321   | 147   |
| Striped bass                       | H | 17    | 21   | 54    | 37    | 63    | 17    | 10    | 18    | 38    | 13    |
|                                    | R | 124   | 161  | 191   | 164   | 295   | 316   | 262   | 819   | 1,418 | 356   |
| Unidentified flounder <sup>4</sup> | H | 0     | 0    | 0     | 1     | 0     | 0     | NA    | 0     | 0     | 0     |
|                                    | R | < 1   | 5    | 3     | 2     | 10    | < 1   | NA    | 3     | 5     | < 1   |
| Winter flounder                    | H | 20    | 5    | 21    | < 1   | 0     | 8     | 15    | 8     | 11    | 17    |
|                                    | R | 9     | 17   | 4     | 5     | 3     | 13    | 18    | 12    | 8     | 9     |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> 'NA' = not available.

<sup>4</sup> Unidentified flounder include flatfish order and unidentified flounder or sole.

2017 New Hampshire State Economy (% of national total)<sup>1</sup>

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 107,083 (0.4%)      | 38,371 (0.5%)   | 603,923 (0.5%) | 30.6 (0.5%)                  | 45.0 (0.4%)                         | 82.0                              | ds  |

Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>1</sup>

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | ds    | 3     | 7     | 7     | 6     | 6     | 4     | 4     | 5     |
|                                   | Receipts | ds    | 687   | 856   | 1,166 | 1,239 | 1,019 | 1,411 | 1,435 | 1,416 |
| Seafood sales, retail             | Firms    | 14    | 11    | 11    | 12    | 15    | 15    | 9     | 8     | 9     |
|                                   | Receipts | 1,870 | 1,502 | 2,152 | 2,096 | 1,861 | 2,419 | 1,722 | 899   | 1,134 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1</sup>

|                                   |                | 2009  | 2010   | 2011   | 2012   | 2013   | 2014  | 2015   | 2016  | 2017  |
|-----------------------------------|----------------|-------|--------|--------|--------|--------|-------|--------|-------|-------|
| Seafood product prep. & packaging | Establishments | 8     | 8      | 8      | 8      | 7      | 6     | 8      | 6     | 5     |
|                                   | Employees      | 115   | 292    | 231    | 229    | 225    | ds    | 182    | 0     | 0     |
|                                   | Payroll        | 3,234 | 10,971 | 12,010 | 12,181 | 13,751 | ds    | 11,160 | 0     | 0     |
| Seafood sales, wholesale          | Establishments | 8     | 8      | 7      | 8      | 9      | 8     | 9      | 9     | 9     |
|                                   | Employees      | 88    | 80     | 84     | 99     | 113    | 106   | 108    | 95    | 100   |
|                                   | Payroll        | 4,268 | 4,171  | 4,123  | 5,738  | 4,562  | 4,271 | 4,543  | 5,480 | 5,863 |
| Seafood sales, retail             | Establishments | 14    | 12     | 16     | 9      | 9      | 9     | 9      | 9     | 7     |
|                                   | Employees      | 95    | 102    | 88     | 48     | 45     | ds    | 57     | 58    | 138   |
|                                   | Payroll        | 2,299 | 2,296  | 1,934  | 870    | 966    | 1,699 | 1,659  | 1,397 | 2,900 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>

|  |                | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016   | 2017   |
|--|----------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Ship and Boat Building                         | Establishments | 8     | 7     | 7     | 7     | 7     | 8     | 6     | 7      | 6      |
|  | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | 181   | 190    | 174    |
|  | Payroll        | ds    | ds    | ds    | ds    | ds    | ds    | 9,800 | 9,413  | 11,357 |
| Deep Sea Freight Transportation                | Establishments | 1     | 1     | 1     | 1     | 1     | 1     | NA    | NA     | NA     |
|  | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | NA    | NA     | NA     |
|  | Payroll        | ds    | ds    | ds    | ds    | ds    | ds    | NA    | NA     | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | NA    | NA    | NA    | 1     | NA    | NA    | NA    | NA     | NA     |
|  | Employees      | NA    | NA    | NA    | ds    | NA    | NA    | NA    | NA     | NA     |
|  | Payroll        | NA    | NA    | NA    | ds    | NA    | NA    | NA    | NA     | NA     |
| Port and Harbor Operations                     | Establishments | NA    | NA    | NA    | 2     | 2     | 1     | 1     | 1      | NA     |
|  | Employees      | NA    | NA    | NA    | ds    | ds    | ds    | ds    | 0      | NA     |
|  | Payroll        | NA    | NA    | NA    | ds    | ds    | ds    | ds    | 0      | NA     |
| Navigational Services to Shipping              | Establishments | 2     | 2     | 2     | 3     | 3     | 3     | 3     | 2      | 3      |
|  | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | 18    | 0      | 0      |
|  | Payroll        | ds    | ds    | ds    | ds    | ds    | ds    | 1,920 | 0      | 0      |
| Marinas  | Establishments | 37    | 35    | 34    | 31    | 35    | 35    | 35    | 35     | 31     |
|  | Employees      | 146   | 135   | 139   | 131   | 155   | 144   | 153   | 162    | 145    |
|  | Payroll        | 7,022 | 6,920 | 7,090 | 6,927 | 8,031 | 8,043 | 8,788 | 10,070 | 9,282  |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.

# Tables | Rhode Island





## Rhode Island | Commercial Fisheries

## 2018 Economic Impacts of the Rhode Island Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 7,173        | 952   | 233    | 368         | 3,773           | 250   | 92     | 128         |
| Commercial Harvesters              | 1,793        | 126   | 40     | 61          | 1,793           | 126   | 40     | 61          |
| Seafood Processors & Dealers       | 309          | 38    | 15     | 19          | 240             | 29    | 11     | 15          |
| Importers                          | 1,802        | 583   | 93     | 178         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 454          | 64    | 23     | 30          | 98              | 14    | 5      | 6           |
| Retail                             | 2,816        | 142   | 63     | 81          | 1,642           | 81    | 36     | 46          |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017    | 2018    |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Total              | 60,133 | 60,857 | 74,870 | 75,118 | 84,581 | 86,413 | 81,798 | 94,779 | 101,840 | 105,051 |
| Finfish            | 22,823 | 22,789 | 24,857 | 28,550 | 29,179 | 31,815 | 25,739 | 23,350 | 23,512  | 22,225  |
| Shellfish          | 37,310 | 38,067 | 50,012 | 46,568 | 55,403 | 54,599 | 56,058 | 71,429 | 78,320  | 82,809  |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 7       | 17      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |         |         |
| American lobster   | 11,264 | 12,404 | 12,765 | 12,119 | 9,732  | 11,709 | 12,368 | 11,889 | 11,016  | 10,957  |
| Atlantic herring   | 1,260  | 1,417  | 1,343  | 2,174  | 4,907  | 2,303  | 1,373  | 1,525  | 939     | 572     |
| Atlantic mackerel  | 3,301  | 1,886  | 100    | 2,804  | 339    | 309    | 1,074  | 448    | 286     | 1,287   |
| Goosefish          | 3,022  | 2,973  | 4,600  | 3,844  | 2,725  | 2,996  | 2,730  | 2,486  | 2,062   | 2,330   |
| Other flounders    | 1,439  | 590    | 805    | 1,025  | 2,125  | 2,948  | 1,774  | 1,465  | 1,546   | 626     |
| Quahog clam        | 2,849  | 3,293  | 3,919  | 5,169  | 4,727  | 5,099  | 5,453  | 5,612  | 5,011   | 4,798   |
| Scups and porgies  | 2,640  | 2,833  | 3,312  | 3,904  | 3,666  | 4,118  | 4,278  | 4,053  | 3,078   | 2,740   |
| Sea scallop        | 2,342  | 2,156  | 6,834  | 9,191  | 18,639 | 10,273 | 8,079  | 10,242 | 22,785  | 22,050  |
| Squid              | 15,249 | 12,590 | 20,381 | 12,744 | 13,207 | 17,718 | 20,288 | 33,938 | 28,333  | 32,571  |
| Summer flounder    | 4,502  | 5,534  | 6,408  | 6,937  | 6,751  | 7,298  | 6,107  | 5,480  | 4,299   | 4,710   |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 80,551 | 71,870 | 77,101 | 73,244 | 85,295 | 91,760 | 75,021 | 82,554 | 83,738 | 81,052 |
| Finfish            | 45,525 | 42,205 | 42,094 | 52,598 | 62,922 | 57,439 | 45,968 | 40,957 | 40,099 | 35,665 |
| Shellfish          | 35,026 | 29,666 | 35,007 | 20,646 | 22,372 | 34,321 | 29,053 | 41,597 | 43,639 | 45,369 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 19     |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| American lobster   | 2,842  | 2,929  | 2,754  | 2,706  | 2,156  | 2,413  | 2,316  | 2,260  | 2,031  | 1,906  |
| Atlantic herring   | 9,528  | 8,449  | 8,729  | 13,839 | 28,330 | 16,505 | 10,431 | 9,539  | 4,535  | 2,159  |
| Atlantic mackerel  | 9,057  | 4,356  | 162    | 5,497  | 714    | 539    | 1,906  | 1,143  | 695    | 3,994  |
| Goosefish          | 2,841  | 2,556  | 3,242  | 2,873  | 2,818  | 2,898  | 2,529  | 2,202  | 2,061  | 3,059  |
| Other flounders    | 990    | 351    | 614    | 663    | 1,367  | 2,158  | 1,057  | 766    | 938    | 215    |
| Quahog clam        | 511    | 599    | 666    | 903    | 784    | 764    | 684    | 660    | 546    | 512    |
| Scups and porgies  | 3,619  | 4,298  | 6,336  | 6,311  | 7,346  | 6,949  | 6,794  | 6,809  | 5,973  | 4,714  |
| Sea scallop        | 356    | 267    | 690    | 944    | 1,646  | 841    | 677    | 897    | 2,310  | 2,482  |
| Squid              | 26,452 | 19,799 | 25,997 | 11,689 | 12,609 | 24,938 | 20,495 | 32,914 | 33,776 | 34,871 |
| Summer flounder    | 1,794  | 2,289  | 2,824  | 2,409  | 2,193  | 2,056  | 1,716  | 1,306  | 896    | 1,023  |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                   | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 |
|-------------------|------|------|------|------|-------|-------|-------|-------|------|------|
| American lobster  | 3.96 | 4.24 | 4.64 | 4.48 | 4.51  | 4.85  | 5.34  | 5.26  | 5.42 | 5.75 |
| Atlantic herring  | 0.13 | 0.17 | 0.15 | 0.16 | 0.17  | 0.14  | 0.13  | 0.16  | 0.21 | 0.26 |
| Atlantic mackerel | 0.36 | 0.43 | 0.62 | 0.51 | 0.47  | 0.57  | 0.56  | 0.39  | 0.41 | 0.32 |
| Goosefish         | 1.06 | 1.16 | 1.42 | 1.34 | 0.97  | 1.03  | 1.08  | 1.13  | 1.00 | 0.76 |
| Other flounders   | 1.45 | 1.68 | 1.31 | 1.55 | 1.55  | 1.37  | 1.68  | 1.91  | 1.65 | 2.91 |
| Quahog clam       | 5.58 | 5.50 | 5.89 | 5.72 | 6.03  | 6.67  | 7.98  | 8.51  | 9.17 | 9.37 |
| Scups and porgies | 0.73 | 0.66 | 0.52 | 0.62 | 0.50  | 0.59  | 0.63  | 0.60  | 0.52 | 0.58 |
| Sea scallop       | 6.58 | 8.07 | 9.90 | 9.73 | 11.32 | 12.21 | 11.94 | 11.42 | 9.86 | 8.88 |
| Squid             | 0.58 | 0.64 | 0.78 | 1.09 | 1.05  | 0.71  | 0.99  | 1.03  | 0.84 | 0.93 |
| Summer flounder   | 2.51 | 2.42 | 2.27 | 2.88 | 3.08  | 3.55  | 3.56  | 4.20  | 4.80 | 4.61 |

**2018 Economic Impacts of Rhode Island Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 98    | 9,337   | 3,682   | 5,622       |
|                              | Private Boat | 230   | 24,718  | 13,075  | 18,298      |
|                              | Shore        | 321   | 33,395  | 16,309  | 24,291      |
| Total Durable Expenditures   |              | 3,314 | 351,652 | 145,575 | 228,804     |
| Total State Economic Impacts |              | 3,963 | 419,102 | 178,640 | 277,016     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 5,756             | Fishing Tackle             | 78,280                     |
| Private Boat                                    | 25,982            | Other Equipment            | 23,724                     |
| Shore   | 26,559            | Boat Expenses              | 187,099                    |
| Total   | 58,297            | Vehicle Expenses           | 17,140                     |
|   |                   | Second Home Expenses       | 876                        |
|   |                   | Total Durable Expenditures | 307,120                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 365,417                    |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 111  | 161  | 105  | 99   | 129  | 160  | 123  | 149  | 132  | 109  |
| Non-Coastal   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Out-of-State  | 209  | 225  | 190  | 169  | 255  | 304  | 175  | 243  | 194  | 233  |
| Total Anglers | 320  | 387  | 296  | 268  | 383  | 464  | 298  | 392  | 326  | 342  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 59    | 41    | 39    | 41    | 47    | 52    | 50    | 49    | 35    | 43    |
| Private     | 1,057 | 978   | 1,247 | 1,028 | 1,109 | 1,058 | 1,310 | 825   | 774   | 974   |
| Shore       | 2,947 | 3,136 | 2,464 | 2,888 | 2,159 | 2,241 | 1,774 | 2,124 | 1,508 | 1,536 |
| Total Trips | 4,063 | 4,155 | 3,750 | 3,957 | 3,316 | 3,351 | 3,134 | 2,999 | 2,318 | 2,553 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2,3,4</sup>**

|                  |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Atlantic bonito  | H | < 1   | < 1   | NA    | < 1   | 9     | 1     | 1     | 0     | 10    | 11    |
|                  | R | 0     | 0     | NA    | 0     | 11    | 9     | 5     | 23    | < 1   | 26    |
| Atlantic cod     | H | 5     | 6     | 7     | 57    | < 1   | 19    | 49    | 77    | 5     | 9     |
|                  | R | 8     | 37    | 36    | 3     | < 1   | 7     | 33    | 59    | < 1   | 3     |
| Black seabass    | H | 92    | 346   | 102   | 226   | 166   | 404   | 434   | 508   | 328   | 706   |
|                  | R | 533   | 433   | 489   | 2,145 | 1,623 | 1,981 | 1,405 | 2,319 | 1,867 | 2,671 |
| Bluefish         | H | 395   | 406   | 414   | 2,312 | 658   | 463   | 90    | 145   | 419   | 120   |
|                  | R | 459   | 173   | 1,185 | 1,356 | 2,000 | 257   | 1,412 | 587   | 116   | 152   |
| Porgies (scup)   | H | 405   | 839   | 1,196 | 1,032 | 2,508 | 2,664 | 1,219 | 1,551 | 1,383 | 2,377 |
|                  | R | 1,213 | 1,394 | 1,486 | 1,670 | 1,669 | 1,451 | 1,604 | 2,961 | 1,863 | 1,796 |
| Striped bass     | H | 138   | 162   | 202   | 131   | 308   | 172   | 67    | 128   | 60    | 39    |
|                  | R | 1,070 | 619   | 621   | 1,292 | 2,574 | 438   | 1,653 | 1,416 | 1,543 | 2,180 |
| Summer flounder  | H | 128   | 346   | 380   | 224   | 235   | 340   | 222   | 113   | 156   | 169   |
|                  | R | 780   | 594   | 1,772 | 928   | 938   | 910   | 630   | 476   | 784   | 791   |
| Winter flounder  | H | 21    | 5     | 0     | 0     | NA    | < 1   | < 1   | 2     | 8     | < 1   |
|                  | R | 4     | 3     | < 1   | 3     | NA    | 1     | 0     | < 1   | < 1   | 0     |
| Wrasses (tautog) | H | 397   | 370   | 79    | 341   | 540   | 239   | 296   | 344   | 141   | 330   |
|                  | R | 792   | 378   | 480   | 846   | 793   | 422   | 1,113 | 1,052 | 545   | 2,006 |
| Yellowfin tuna   | H | NA    | NA    | NA    | NA    | 13    | 1     | 8     | < 1   | NA    | NA    |
|                  | R | NA    | NA    | NA    | NA    | 0     | 0     | 11    | 0     | NA    | NA    |

<sup>1</sup> Non-coastal data are not available because all of the state's residents are considered coastal county residents.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.<sup>4</sup> 'NA' = not available.

## Rhode Island | Marine Economy

2017 Rhode Island's State Economy (% of national total)<sup>1</sup>

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 80,905 (0.3%)       | 28,783 (0.4%)   | 435,978 (0.3%) | 20.9 (0.3%)                  | 33.5 (0.3%)                         | 60.7                              | ds  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 9     | 6     | 9     | 10    | 8     | 8     | 6     | 6     | 0     |
|                                   | Receipts | 1,045 | 907   | 1,168 | 1,441 | 1,393 | 1,418 | 1,381 | 1,374 | 0     |
| Seafood sales, retail             | Firms    | 16    | 17    | 25    | 20    | 22    | 16    | 15    | 14    | 16    |
|                                   | Receipts | 2,821 | 2,769 | 3,033 | 2,536 | 2,501 | 1,331 | 1,259 | 1,569 | 1,059 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1,3</sup>

|                                   |                | 2009  | 2010  | 2011   | 2012   | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Establishments | 7     | 5     | 4      | 3      | 3     | 3     | 3     | 2     | NA    |
|                                   | Employees      | 275   | 193   | 178    | ds     | ds    | ds    | 71    | 0     | NA    |
|                                   | Payroll        | 5,821 | 6,096 | 5,544  | ds     | ds    | ds    | 2,243 | 0     | NA    |
| Seafood sales, wholesale          | Establishments | 34    | 32    | 34     | 32     | 31    | 28    | 28    | 26    | 22    |
|                                   | Employees      | 202   | 204   | 230    | 278    | 182   | 188   | 182   | 164   | 130   |
|                                   | Payroll        | 9,534 | 9,815 | 10,264 | 13,064 | 8,412 | 8,763 | 8,140 | 8,567 | 7,308 |
| Seafood sales, retail             | Establishments | 24    | 26    | 23     | 24     | 24    | 27    | 26    | 24    | 24    |
|                                   | Employees      | 127   | 113   | 109    | 111    | 113   | 114   | 113   | 100   | 106   |
|                                   | Payroll        | 2,398 | 2,309 | 2,232  | 2,388  | 2,610 | 2,608 | 2,925 | 2,932 | 2,971 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 33     | 29     | 30     | 37     | 33     | 33     | 33     | 30     | 27     |
|  | Employees      | 1,085  | 954    | 916    | 717    | 768    | 939    | 902    | 757    | 565    |
|  | Payroll        | 41,246 | 40,004 | 33,316 | 32,070 | 34,483 | 42,200 | 41,096 | 34,132 | 28,098 |
| Deep Sea Freight Transportation                | Establishments | 2      | 2      | 2      | 2      | 1      | 1      | 2      | 2      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
| Deep Sea Passenger Transportation              | Establishments | 1      | 1      | 1      | 1      | 2      | 3      | 3      | 2      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 18     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | 1,574  | 0      | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 1      | 1      | 2      | 1      | 1      | 1      | 1      | 1      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
| Port and Harbor Operations                     | Establishments | 1      | 1      | 1      | 5      | 2      | 3      | 3      | 3      | 3      |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 18     | 14     | 19     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | 951    | 813    | 1,040  |
| Marine Cargo Handling                          | Establishments | 5      | 5      | 5      | 4      | 4      | 3      | 2      | 3      | 3      |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 244    | 0      |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 6,495  | 0      |
| Navigational Services to Shipping              | Establishments | 8      | 8      | 8      | 7      | 7      | 6      | 6      | 6      | 7      |
|  | Employees      | ds     | ds     | 107    | ds     | ds     | ds     | 69     | 81     | 83     |
|  | Payroll        | 3,728  | 3,955  | 4,002  | 3,272  | ds     | ds     | 4,209  | 3,771  | 4,578  |
| Marinas  | Establishments | 70     | 72     | 71     | 67     | 71     | 65     | 72     | 71     | 63     |
|  | Employees      | 459    | 428    | 460    | 424    | 466    | 449    | 409    | 435    | 375    |
|  | Payroll        | 21,372 | 22,227 | 22,618 | 20,811 | 24,214 | 24,876 | 25,206 | 26,264 | 20,323 |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.

# Mid-Atlantic Region

- Delaware
- Maryland
- New Jersey
- New York
- Virginia



A commercial fishing boat docked near shore.  
Photo: NOAA Fisheries/Emily Markowitz



## MANAGEMENT CONTEXT

The Mid-Atlantic Region includes Delaware, Maryland, New Jersey, New York, and Virginia. Federal fisheries in this region are managed by the Mid-Atlantic Fishery Management Council (MAFMC) and NOAA Fisheries under seven fishery management plans (FMPs). Two of these FMPs are developed in conjunction with the New England Fishery Management Council (NEFMC). The MAFMC is the lead council for the Spiny Dogfish FMP; the NEFMC is the lead for the Monkfish FMP.

### Mid-Atlantic Region FMPs

- Atlantic mackerel, squid and butterfish
- Atlantic bluefish
- Spiny dogfish (with the NEFMC)
- Summer flounder, scup and black sea bass
- Surfclam and ocean quahog
- Golden tilefish
- Monkfish (with the NEFMC)

Summer flounder was the only stock/complex in the Mid-Atlantic region listed as experiencing overfishing in 2018. No stock managed by the MAFMC was determined to be overfished in 2018.

## Catch Share Programs

Two catch share programs operate in the Mid-Atlantic: 1) Mid-Atlantic Surfclam and Ocean Quahog IFQ Program; and 2) Mid-Atlantic Golden Tilefish IFQ Program. Following is a description of these catch share programs and their performance. The landings revenues for these programs totaled more than \$64 million (in inflation-adjusted 2018 dollars) in 2017.

**Mid-Atlantic Surfclam and Ocean Quahog IFQ Program:** This program was implemented in 1990 to conserve the surfclam and quahog resource and stabilize harvest rates; simplify regulatory requirements to minimize public and private management costs; promote economic efficiency by bringing harvest capacity in line with processing and biological capacity; and create a management approach that is flexible and adaptive to short-term events or circumstances. The performance

metrics for the surfclam and ocean quahog fisheries are presented separately here because these fisheries are prosecuted as independent fisheries despite being in the same catch share program. The 2017 key performance indicators of the surfclam program show that relative to the baseline period (the three-year period prior to implementation), landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while quota and inflation-adjusted revenue per active vessel increased.

The 2017 key performance indicators of the quahog program show that relative to the baseline period, quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per active vessel increased.

**Mid-Atlantic Golden Tilefish IFQ Program:** This program was implemented in 2009 to reduce over-capacity and eliminate problems associated with the race to fish golden tilefish. This IFQ program is unique because many key events occurred outside the traditional management process. Prior to the implementation of the IFQ program, fishermen crafted internal agreements that promoted cooperation. Their cooperative processes helped fishing businesses stay viable under new regulations, which laid the foundation for implementing the IFQ program. The 2017 key performance indicators of the program show that relative to the baseline period (the three-year period prior to implementation), quota, landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while inflation-adjusted revenue per active vessel increased.

## COMMERCIAL FISHERIES — MID-ATLANTIC REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.



**Key Mid-Atlantic Region Commercial Species**

- American lobster
- Atlantic surf clam
- Blue crab
- Eastern oyster
- Menhaden
- Quahog clam
- Sea scallop
- Squid
- Striped bass
- Summer flounder
- American lobster

**Economic Impacts**

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the

seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry in New Jersey generated the largest employment impacts in the Mid-Atlantic region with 49,398 full- and part-time jobs. New Jersey also generated the largest sales impacts (\$10.3 billion), value-added impacts (\$3.6 billion), and income impacts (\$2.1 billion).

**Landings Revenue**

In 2018, landings revenue in the Mid-Atlantic Region totaled \$451.2 million, a 7% increase from 2009 (an 8% decrease in real terms after adjusting for inflation) and a 4% decrease from 2017. Landings revenue was highest in Virginia (\$177.3 million), followed by New Jersey (\$151.9 million).

Shellfish landings revenue accounted for 76% of all landings revenue. In 2018, sea scallop (\$120.8 million), blue crab (\$84.7 million), and eastern oyster (\$52.5 million) had the highest landings revenue in this region. Together, these top three species accounted for 57% of total landings revenue.

From 2009 to 2018, eastern oyster (461%, 383% in real terms), squid (224%, 179% in real terms), and quahog clam (55%, 34% in real terms) had the largest increases, while Atlantic surf clam (-53%, -59% in real terms) and sea scallop (-25%, -36% in real terms) were the only species with landings revenue declines during this period. From 2017 to 2018, Atlantic surf clam (756%), squid (47%), and menhaden (3%) had the largest increases, while striped bass (-18%), eastern oyster (-15%), and American lobster (-15%) had the largest decreases.

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-unit-ed-states-interactive-tool>.]

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

**Commercial Revenue: Largest Increases***From 2009:*

- Eastern oyster (461%, 383% in real terms)
- Squid (224%, 179% in real terms)
- Quahog clam (55%, 34% in real terms)

*From 2017:*

- Atlantic surf clam (756%)
- Squid (47%)
- Menhaden (3%)

**Commercial Revenue: Largest Decreases***From 2009:*

- Atlantic surf clam (-53%, -59% in real terms)
- Sea scallop (-25%, -36% in real terms)

*From 2017:*

- Striped bass (-18%)
- Eastern oyster (-15%)
- American lobster (-15%)

**Commercial Landings: Largest Increases***From 2009:*

- Squid (374%)
- Eastern oyster (228%)
- Quahog clam (56%)

*From 2017:*

- Atlantic surf clam (757%)
- Squid (19%)
- Menhaden (3%)

**Commercial Landings: Largest Decreases***From 2009:*

- Atlantic surf clam (-55%)
- Sea scallop (-48%)
- Striped bass (-44%)

*From 2017:*

- American lobster (-22%)
- Sea scallop (-12%)
- Striped bass (-9%)

**Landings**

In 2018, Mid-Atlantic Region commercial fishermen landed over 602 million pounds of finfish and shellfish. This represents a 9% decrease from 2009 and a 5% increase from 2017. Menhaden contributed the highest landings volume in the region, accounting for 67% of total landing weight.

From 2009 to 2018, squid (374%), eastern oyster (228%), and quahog clam (56%) had the largest increases, while Atlantic surf clam (-55%), sea scallop (-48%), and striped bass (-44%) had the largest decreases. From 2017 to 2018, Atlantic surf clam (757%), squid (19%), and menhaden (3%) had the largest increases, while American lobster (-22%), sea scallop (-12%), and striped bass (-9%) had the largest decreases.

**Prices**

In 2018, eastern oyster (\$11.2 per pound) received the highest ex-vessel price in the region. Landings of menhaden (\$0.1 per pound) had the lowest ex-vessel price. From 2009 to 2018, summer flounder (112%, 82% in real terms), striped bass (99%, 71% in real terms), and eastern oyster (71%, 48% in real terms) had the largest increases, while squid (-32%, -41% in real terms) and quahog clam (-0.4%, -14% in real terms) had the largest decreases. From 2017 to 2018, squid (24%), American lobster (9%), and sea scallop (0.2%) had the largest increases, while striped bass (-9%), eastern oyster (-8%), and quahog clam (-5%) had the largest decreases.

**RECREATIONAL FISHERIES — MID-ATLANTIC REGION**

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>3</sup>

<sup>3</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018.

**Key Mid-Atlantic Region Recreational Species<sup>4</sup>**

- Black sea bass
- Bluefish
- Drum (Atlantic croaker)
- Drum (spot)
- Drum (weakfish)
- Porgies (scup)
- Striped bass
- Summer flounder
- Winter flounder
- Wrasses (tautog)

**Economic Impacts and Expenditures**

The economic contribution of recreational fishing activities in the Mid-Atlantic Region is based on spending by recreational anglers.<sup>5</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>6</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called

IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

The greatest employment impacts from expenditures on saltwater recreational fishing in the Mid-Atlantic Region were generated in New Jersey (14,395 jobs), followed by New York (10,360 jobs) and Maryland (7,692 jobs). The largest sales impacts were observed in New Jersey (\$1.9 billion), followed by New York (\$1.1 billion) and Maryland (\$839.5 million). The biggest income impacts were generated in New Jersey (\$814.7 million), followed by New York (\$479.3 million) and Maryland (\$334.8 million). The greatest value-added impacts were in New Jersey (\$1.3 billion), followed by New York (\$817.1 million) and Maryland (\$556.1 million).

Expenditures for fishing trips and durable equipment across the Mid-Atlantic Region in 2018 totaled \$4.3 billion. This total included \$2.8 billion in durable goods expenditures, with the largest portion coming from boat expenses (\$1.7 billion).

**Participation**

In 2018, there were 1.9 million recreational anglers who fished in the Mid-Atlantic Region. This number represented a 27% decrease from 2009 and a 1% increase from 2017. The anglers are categorized as either residents from coastal (94%) or non-coastal (6%) counties.

**Fishing Trips**

In 2018, recreational fishermen took 39 million fishing trips in the Mid-Atlantic Region. This number represented a 24% decrease from 2009 and a 15% decrease from 2017. The largest proportions of trips were taken in the shore mode (60%) and private boat (38%).

<sup>4</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>5</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>6</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

States with the highest number of recorded trips in the Mid-Atlantic Region were New Jersey (12.5 million trips) and New York (11.2 million trips).

## Harvest and Release Trends

Of the Mid-Atlantic Region's key species and species groups, summer flounder (21.3 million fish), black sea bass (16 million fish), and striped bass (15.5 million fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, porgies (scup) (37%) had the largest increases, while winter flounder (-84%), drum (Atlantic croaker) (-68%), and bluefish (-55%) had the largest decreases. From 2017 to 2018, winter flounder (119%) had the largest increases, while drum (weakfish) (-51%), bluefish (-49%), and drum (spot) (-48%) had the largest decreases.

### Harvest and Release: Largest Increases

*From 2009:*

- Porgies (scup) (37%)

*From 2017:*

- Winter flounder (119%)

### Harvest and Release: Largest Decreases

*From 2009:*

- Winter flounder (-84%)
- Drum (Atlantic croaker) (-68%)
- Bluefish (-55%)

*From 2017:*

- Drum (weakfish) (-51%)
- Bluefish (-49%)
- Drum (spot) (-48%)

## MARINE ECONOMY — MID-ATLANTIC REGION

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The

state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>7</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>8</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

The Bureau of Labor Statistics suppressed the CFLQ value for Delaware for 2017. Of the remaining states, New Jersey had the highest CFLQ at 0.93. Maryland had a CFLQ value of 0.61.

In 2017, 1.1 million employer establishments operated throughout the entire Mid-Atlantic Region (including marine and non-marine related establishments). These establishments employed 18 million workers and had a total annual payroll of \$1.1 trillion. The combined gross state product of Delaware, Maryland, New Jersey, New York, and Virginia was approximately \$3.2 trillion in 2017.<sup>9</sup>

## Seafood Sales and Processing

**Seafood Product Preparation and Packaging:** In 2017, the Mid-Atlantic Region had 380 non-employer firms in the seafood product preparation and packaging sector. Annual receipts for these firms totaled \$25.8 million.<sup>10</sup> There were 70 employer firms in this sector (a 4% decrease from 2009). These establishments employed 2,077 workers and had a total annual payroll of \$107.1 million.<sup>11</sup> The greatest number of employer and non-employer establishments in this sector was in New York

<sup>7</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>8</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>9</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

<sup>10</sup> The Census Bureau suppressed number of firms data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.

(211), followed by Virginia (87) and Maryland (85).

**Seafood Sales, Retail:** In 2017, there were 413 non-employer firms in seafood retail sales in the states that make up the Mid-Atlantic Region (a 12% decrease from 2009). Annual receipts for these firms totaled \$43.1 million. There were 645 employer firms in the seafood retail sector (a 2% decrease from 2009). These establishments employed 3,094 workers (a 17% increase from 2009) and had a total annual payroll of \$84.7 million. The greatest number of employer and non-employer establishments in this sector was in New York (564), followed by New Jersey (183) and Maryland (156).

**Seafood Sales, Wholesale:** There were 449 employer firms in the seafood wholesale sector in the Mid-Atlantic Region in 2017 (a 4% decrease from 2009). These establishments employed 4,011 workers and had a total annual payroll of \$200.2 million.<sup>12</sup> The greatest number of employer and non-employer establishments in this sector was in New York (259), followed by New Jersey (73) and Virginia (58).

## Transportation Support and Marine Operations

Data for the transportation support and marine operations sectors of the Mid-Atlantic Region's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the ship and boat building sector in the Mid-Atlantic Region accounted for \$1.9 billion in payroll. The marine cargo handling sector in Delaware, Maryland, New Jersey, and New York totaled \$702.6 million in payroll in 2017.

<sup>11</sup> The Census Bureau suppressed number of employees and payroll data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.

<sup>12</sup> The Census Bureau suppressed number of employees and payroll data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.





# Tables | Mid-Atlantic Region



## Mid-Atlantic Region | Commercial Fisheries

## 2018 Economic Impacts of the Mid-Atlantic Seafood Industry (millions of dollars)

|            | Landings Revenue | With Imports |        |        |             | Without Imports |       |        |             |
|------------|------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|            |                  | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Delaware   | 10               | 479          | 84     | 16     | 28          | 341             | 45    | 10     | 15          |
| Maryland   | 66               | 16,456       | 2,518  | 582    | 928         | 4,910           | 302   | 110    | 151         |
| New Jersey | 152              | 49,398       | 10,266 | 2,109  | 3,555       | 5,372           | 512   | 169    | 243         |
| New York   | 47               | 43,674       | 6,708  | 1,388  | 2,330       | 2,523           | 138   | 48     | 67          |
| Virginia   | 177              | 23,487       | 3,239  | 800    | 1,248       | 12,382          | 808   | 306    | 416         |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 421,035 | 492,796 | 551,785 | 507,484 | 428,135 | 457,713 | 484,626 | 526,969 | 472,362 | 451,212 |
| Finfish            | 99,437  | 109,605 | 119,580 | 128,531 | 118,726 | 117,884 | 112,368 | 105,702 | 112,512 | 106,193 |
| Shellfish          | 321,458 | 382,996 | 432,115 | 378,875 | 309,343 | 339,696 | 372,183 | 421,215 | 359,795 | 344,984 |
| Other              | 141     | 195     | 91      | 78      | 66      | 133     | 76      | 52      | 55      | 35      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 2,863   | 6,281   | 4,762   | 5,271   | 4,062   | 3,853   | 3,308   | 3,125   | 3,420   | 2,909   |
| Atlantic surf clam | 26,426  | 19,940  | 18,737  | 16,813  | 13,688  | 11,455  | 13,004  | 12,477  | 1,465   | 12,546  |
| Blue crab          | 79,837  | 127,735 | 101,638 | 101,947 | 78,901  | 89,022  | 96,449  | 108,083 | 90,693  | 84,659  |
| Eastern oyster     | 9,356   | 12,038  | 13,043  | 20,231  | 43,700  | 54,577  | 60,951  | 46,551  | 61,899  | 52,503  |
| Menhaden           | 28,594  | 40,345  | 39,675  | 40,043  | 33,778  | 33,332  | 40,325  | 34,081  | 40,405  | 41,477  |
| Quahog clam        | 23,022  | 7,886   | 27,608  | 29,502  | 35,902  | 38,153  | 28,133  | 45,239  | 38,390  | 35,773  |
| Sea scallop        | 161,643 | 184,289 | 227,449 | 168,921 | 100,411 | 125,679 | 150,716 | 180,782 | 137,369 | 120,817 |
| Squid              | 6,975   | 11,806  | 20,562  | 17,661  | 12,039  | 8,294   | 8,378   | 15,325  | 15,412  | 22,625  |
| Striped bass       | 11,465  | 11,306  | 12,680  | 13,877  | 17,802  | 16,057  | 12,189  | 14,077  | 15,447  | 12,733  |
| Summer flounder    | 9,973   | 12,850  | 15,614  | 17,190  | 17,150  | 13,195  | 14,398  | 13,913  | 12,061  | 11,948  |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 658,631 | 796,807 | 795,994 | 759,889 | 574,820 | 562,970 | 615,267 | 565,083 | 571,331 | 602,051 |
| Finfish            | 485,856 | 573,163 | 573,739 | 569,008 | 441,070 | 454,904 | 500,287 | 423,896 | 446,045 | 461,139 |
| Shellfish          | 172,656 | 223,515 | 222,109 | 190,726 | 133,618 | 107,957 | 114,916 | 141,146 | 125,231 | 140,881 |
| Other              | 119     | 129     | 147     | 155     | 132     | 109     | 63      | 41      | 54      | 31      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | 790     | 1,553   | 1,105   | 1,546   | 1,228   | 844     | 654     | 601     | 623     | 485     |
| Atlantic surf clam | 41,692  | 30,946  | 30,272  | 27,008  | 22,788  | 19,447  | 21,392  | 20,169  | 2,167   | 18,580  |
| Blue crab          | 75,842  | 119,283 | 104,425 | 88,974  | 51,667  | 54,414  | 59,730  | 74,652  | 63,253  | 58,998  |
| Eastern oyster     | 1,431   | 1,761   | 2,031   | 2,738   | 4,922   | 5,456   | 6,626   | 5,036   | 5,110   | 4,689   |
| Menhaden           | 395,617 | 499,747 | 496,876 | 492,532 | 366,584 | 379,997 | 435,313 | 363,902 | 388,167 | 401,358 |
| Quahog clam        | 3,255   | 1,246   | 3,551   | 3,730   | 4,586   | 5,016   | 3,256   | 6,231   | 5,203   | 5,077   |
| Sea scallop        | 25,621  | 23,999  | 23,386  | 17,627  | 8,855   | 10,256  | 12,202  | 15,619  | 15,235  | 13,376  |
| Squid              | 7,552   | 25,853  | 33,150  | 25,435  | 14,516  | 8,142   | 7,102   | 15,078  | 30,116  | 35,792  |
| Striped bass       | 5,861   | 5,582   | 5,464   | 5,337   | 4,676   | 4,878   | 3,556   | 3,520   | 3,601   | 3,275   |
| Summer flounder    | 5,135   | 6,385   | 8,673   | 7,794   | 8,025   | 4,901   | 4,975   | 3,725   | 2,846   | 2,907   |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                    | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|--------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| American lobster   | 3.62 | 4.04 | 4.31 | 3.41 | 3.31  | 4.56  | 5.06  | 5.20  | 5.49  | 6.00  |
| Atlantic surf clam | 0.63 | 0.64 | 0.62 | 0.62 | 0.60  | 0.59  | 0.61  | 0.62  | 0.68  | 0.68  |
| Blue crab          | 1.05 | 1.07 | 0.97 | 1.15 | 1.53  | 1.64  | 1.61  | 1.45  | 1.43  | 1.43  |
| Eastern oyster     | 6.54 | 6.84 | 6.42 | 7.39 | 8.88  | 10.00 | 9.20  | 9.24  | 12.11 | 11.20 |
| Menhaden           | 0.07 | 0.08 | 0.08 | 0.08 | 0.09  | 0.09  | 0.09  | 0.09  | 0.10  | 0.10  |
| Quahog clam        | 7.07 | 6.33 | 7.77 | 7.91 | 7.83  | 7.61  | 8.64  | 7.26  | 7.38  | 7.05  |
| Sea scallop        | 6.31 | 7.68 | 9.73 | 9.58 | 11.34 | 12.25 | 12.35 | 11.57 | 9.02  | 9.03  |
| Squid              | 0.92 | 0.46 | 0.62 | 0.69 | 0.83  | 1.02  | 1.18  | 1.02  | 0.51  | 0.63  |
| Striped bass       | 1.96 | 2.03 | 2.32 | 2.60 | 3.81  | 3.29  | 3.43  | 4.00  | 4.29  | 3.89  |
| Summer flounder    | 1.94 | 2.01 | 1.80 | 2.21 | 2.14  | 2.69  | 2.89  | 3.74  | 4.24  | 4.11  |

**2018 Economic Impacts of the Mid-Atlantic Recreational Fishing Expenditures (thousands of dollars, trips)**

|            | Trips  | #Jobs  | Sales     | Income  | Value Added |
|------------|--------|--------|-----------|---------|-------------|
| Delaware   | 2,147  | 1,534  | 172,848   | 63,097  | 114,929     |
| Maryland   | 6,762  | 7,692  | 839,473   | 334,833 | 556,102     |
| New Jersey | 12,493 | 14,395 | 1,900,220 | 814,677 | 1,271,683   |
| New York   | 11,242 | 10,360 | 1,123,921 | 479,264 | 817,145     |
| Virginia   | 6,386  | 6,504  | 711,537   | 275,441 | 465,047     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 98,126            | Fishing Tackle             | 745,615                    |
| Private Boat                                    | 772,145           | Other Equipment            | 261,579                    |
| Shore   | 540,376           | Boat Expenses              | 1,651,038                  |
| Total   | 1,410,648         | Vehicle Expenses           | 175,932                    |
|   |                   | Second Home Expenses       | 13,055                     |
|   |                   | Total Durable Expenditures | 2,847,218                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 4,257,866                  |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Coastal       | 2,437 | 2,598 | 2,244 | 2,093 | 2,080 | 2,111 | 1,860 | 2,238 | 1,751 | 1,811 |
| Non-Coastal   | 187   | 178   | 145   | 175   | 139   | 130   | 124   | 169   | 147   | 106   |
| Total Anglers | 2,623 | 2,776 | 2,389 | 2,268 | 2,219 | 2,241 | 1,984 | 2,407 | 1,898 | 1,917 |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 1,109  | 871    | 1,031  | 983    | 1,361  | 1,209  | 1,299  | 688    | 743    | 770    |
| Private     | 22,753 | 24,273 | 22,649 | 22,528 | 21,648 | 20,821 | 18,975 | 19,112 | 18,863 | 14,692 |
| Shore       | 27,660 | 29,410 | 29,535 | 29,617 | 28,119 | 29,679 | 27,409 | 28,558 | 26,399 | 23,569 |
| Total Trips | 51,522 | 54,554 | 53,214 | 53,129 | 51,128 | 51,710 | 47,683 | 48,359 | 46,005 | 39,030 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)**

|                         |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Black sea bass          | H | 3,054  | 3,221  | 1,092  | 2,171  | 2,054  | 2,062  | 3,146  | 3,935  | 4,292  | 2,222  |
|                         | R | 16,444 | 18,521 | 8,802  | 24,303 | 15,652 | 11,901 | 14,406 | 23,076 | 28,100 | 13,787 |
| Bluefish                | H | 7,268  | 7,770  | 8,379  | 7,886  | 5,807  | 10,557 | 5,256  | 6,108  | 6,720  | 3,419  |
|                         | R | 15,134 | 13,328 | 13,772 | 15,150 | 9,207  | 15,481 | 10,901 | 11,933 | 12,805 | 6,596  |
| Drum (Atlantic croaker) | H | 15,419 | 16,307 | 10,726 | 12,385 | 18,080 | 13,390 | 10,437 | 7,969  | 8,134  | 5,894  |
|                         | R | 20,848 | 17,969 | 15,564 | 26,605 | 30,906 | 15,221 | 8,602  | 8,250  | 11,677 | 5,792  |
| Drum (spot)             | H | 11,796 | 11,511 | 12,741 | 14,839 | 16,002 | 18,694 | 3,174  | 6,456  | 19,198 | 8,787  |
|                         | R | 6,456  | 7,705  | 8,266  | 11,896 | 18,447 | 6,604  | 2,746  | 3,591  | 5,644  | 4,109  |
| Drum (weakfish)         | H | 101    | 37     | 28     | 386    | 135    | 59     | 100    | 58     | 120    | 33     |
|                         | R | 420    | 1,239  | 1,215  | 1,972  | 626    | 652    | 1,219  | 1,978  | 819    | 431    |
| Porgies (scup)          | H | 3,114  | 5,189  | 2,336  | 1,912  | 3,376  | 2,832  | 7,101  | 4,450  | 8,653  | 5,831  |
|                         | R | 6,794  | 5,150  | 3,760  | 5,647  | 7,025  | 4,907  | 8,331  | 13,098 | 17,450 | 7,781  |
| Striped bass            | H | 3,596  | 4,122  | 3,529  | 2,699  | 3,785  | 3,103  | 2,368  | 3,047  | 2,331  | 1,701  |
|                         | R | 11,293 | 11,705 | 9,350  | 13,897 | 15,757 | 15,196 | 16,664 | 21,183 | 14,468 | 13,802 |
| Summer flounder         | H | 3,144  | 2,698  | 3,477  | 4,969  | 5,633  | 4,337  | 3,249  | 3,680  | 2,741  | 1,966  |
|                         | R | 45,411 | 53,519 | 48,568 | 36,828 | 35,595 | 36,106 | 28,159 | 24,784 | 23,194 | 19,327 |
| Winter flounder         | H | 161    | 167    | 234    | 177    | 21     | 124    | 18     | 93     | 9      | 14     |
|                         | R | 271    | 296    | 259    | 125    | 104    | 47     | 105    | 31     | 23     | 57     |
| Wrasses (tautog)        | H | 1,738  | 2,053  | 972    | 577    | 1,055  | 1,667  | 987    | 1,349  | 1,048  | 584    |
|                         | R | 5,714  | 6,669  | 5,018  | 5,626  | 7,082  | 5,460  | 7,617  | 10,302 | 9,736  | 6,149  |

<sup>1</sup> Delaware anglers estimates are not available for the non-coastal mode.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.





# Tables | Delaware



## Delaware | Commercial Fisheries

## 2018 Economic Impacts of the Delaware Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 479          | 84    | 16     | 28          | 341             | 45    | 10     | 15          |
| Commercial Harvesters              | 173          | 18    | 4      | 6           | 173             | 18    | 4      | 6           |
| Seafood Processors & Dealers       | 47           | 10    | 2      | 3           | 33              | 7     | 1      | 2           |
| Importers                          | 97           | 31    | 5      | 10          | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 38           | 6     | 2      | 3           | 22              | 3     | 1      | 2           |
| Retail                             | 124          | 19    | 3      | 6           | 113             | 17    | 3      | 6           |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>

|                      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016   | 2017  | 2018  |
|----------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Total                | 7,050 | 7,502 | 6,478 | 8,037 | 6,700 | 6,145 | 5,955 | 10,706 | 8,861 | 9,596 |
| Finfish              | 790   | 847   | 906   | 679   | 940   | 283   | 506   | 506    | 308   | 664   |
| Shellfish            | 6,260 | 6,638 | 5,546 | 7,358 | 5,760 | 5,862 | 5,449 | 10,199 | 8,553 | 8,931 |
| Other                | 0     | 17    | 26    | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| <b>Key Species</b>   |       |       |       |       |       |       |       |        |       |       |
| American eel         | 134   | 206   | 274   | 159   | 244   | 156   | 127   | 130    | NA    | 97    |
| Black drum           | 12    | 17    | 0     | 4     | 11    | 0     | 17    | 20     | 0     | 11    |
| Black sea bass       | 149   | 190   | 196   | 0     | 0     | 0     | 304   | 301    | 278   | 513   |
| Blue crab            | 5,435 | 5,957 | 4,819 | 6,664 | 4,576 | 4,379 | 4,498 | 9,145  | 7,318 | 7,574 |
| Eastern oyster       | 334   | 404   | 347   | 345   | 407   | 420   | 358   | 498    | 701   | 644   |
| Knobbed whelk        | 284   | 123   | 106   | 18    | 299   | 438   | 381   | 294    | 237   | 640   |
| Northern quahog clam | 117   | 110   | 143   | 123   | 177   | 133   | 97    | 69     | 101   | 73    |
| Quahog clam          | 117   | 110   | 143   | 123   | 177   | 133   | 97    | 69     | 101   | 73    |
| Summer flounder      | 0     | 5     | 2     | 0     | 0     | 5     | 4     | 7      | 5     | 2     |
| Weakfish             | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total                | 4,621 | 4,933 | 4,444 | 5,406 | 3,659 | 3,171 | 2,786 | 5,427 | 4,242 | 4,691 |
| Finfish              | 487   | 481   | 448   | 424   | 441   | 337   | 390   | 329   | 215   | 455   |
| Shellfish            | 4,134 | 4,442 | 3,979 | 4,982 | 3,218 | 2,834 | 2,396 | 5,098 | 4,027 | 4,236 |
| Other                | 0     | 9     | 17    | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>Key Species</b>   |       |       |       |       |       |       |       |       |       |       |
| American eel         | 60    | 69    | 91    | 54    | 83    | 62    | 45    | 45    | NA    | 31    |
| Black drum           | 31    | 50    | 0     | 11    | 25    | 0     | 39    | 49    | 1     | 32    |
| Black sea bass       | 50    | 80    | 86    | 0     | 0     | 0     | 112   | 97    | 117   | 172   |
| Blue crab            | 3,414 | 4,110 | 3,502 | 4,571 | 2,488 | 2,000 | 2,124 | 4,555 | 3,788 | 3,842 |
| Eastern oyster       | 67    | 71    | 62    | 60    | 71    | 73    | 61    | 72    | 79    | 107   |
| Knobbed whelk        | 234   | 89    | 74    | 12    | 125   | 189   | 159   | 123   | 99    | 267   |
| Northern quahog clam | 31    | 30    | 39    | 32    | 43    | 41    | 30    | 18    | 28    | 20    |
| Quahog clam          | 31    | 30    | 39    | 32    | 43    | 41    | 30    | 18    | 28    | 20    |
| Summer flounder      | 0     | 2     | 1     | 0     | 0     | 2     | 1     | 2     | 1     | 1     |
| Weakfish             | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                      | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| American eel         | 2.24 | 3.00 | 3.03 | 2.93 | 2.94 | 2.50 | 2.83 | 2.93 | NA   | 3.08 |
| Black drum           | 0.41 | 0.35 | NaN  | 0.35 | 0.43 | NA   | 0.44 | 0.41 | 0.61 | 0.35 |
| Black sea bass       | 2.96 | 2.38 | 2.29 | NA   | NA   | NA   | 2.73 | 3.11 | 2.36 | 2.98 |
| Blue crab            | 1.59 | 1.45 | 1.38 | 1.46 | 1.84 | 2.19 | 2.12 | 2.01 | 1.93 | 1.97 |
| Eastern oyster       | 4.97 | 5.67 | 5.56 | 5.76 | 5.71 | 5.71 | 5.85 | 6.90 | 8.83 | 6.03 |
| Knobbed whelk        | 1.21 | 1.39 | 1.43 | 1.43 | 2.40 | 2.31 | 2.40 | 2.40 | 2.40 | 2.40 |
| Northern quahog clam | 3.79 | 3.69 | 3.72 | 3.84 | 4.07 | 3.25 | 3.26 | 3.75 | 3.61 | 3.61 |
| Quahog clam          | 3.79 | 3.69 | 3.72 | 3.84 | 4.07 | 3.25 | 3.26 | 3.75 | 3.61 | 3.61 |
| Summer flounder      | NA   | 2.47 | 2.42 | NA   | NA   | 2.90 | 3.09 | 3.24 | 3.27 | 2.95 |
| Weakfish             | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Delaware Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income | Value Added |
|------------------------------|--------------|-------|---------|--------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 17    | 1,471   | 551    | 834         |
|                              | Private Boat | 287   | 38,282  | 11,762 | 23,715      |
|                              | Shore        | 596   | 65,774  | 22,693 | 44,435      |
| Total Durable Expenditures   |              | 635   | 67,321  | 28,091 | 45,945      |
| Total State Economic Impacts |              | 1,534 | 172,848 | 63,097 | 114,929     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 962               | Fishing Tackle             | 24,218                     |
| Private Boat                                    | 36,159            | Other Equipment            | 8,283                      |
| Shore   | 58,041            | Boat Expenses              | 44,257                     |
| Total   | 95,161            | Vehicle Expenses           | 5,141                      |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 81,899                     |
| Total State Trip and Durable Goods Expenditures |                   |                            | 177,060                    |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 114  | 128  | 129  | 111  | 82   | 93   | 67   | 104  | 80   | 64   |
| Non-Coastal   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Out-of-State  | 173  | 165  | 190  | 151  | 97   | 146  | 84   | 168  | 94   | 69   |
| Total Anglers | 287  | 293  | 318  | 262  | 179  | 239  | 151  | 272  | 174  | 133  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 45    | 19    | 18    | 21    | 37    | 39    | 37    | 14    | 14    | 7     |
| Private     | 1,034 | 1,065 | 1,028 | 973   | 950   | 858   | 744   | 637   | 680   | 701   |
| Shore       | 1,871 | 2,012 | 1,832 | 1,523 | 1,448 | 1,593 | 1,289 | 1,480 | 1,297 | 1,439 |
| Total Trips | 2,950 | 3,097 | 2,878 | 2,516 | 2,435 | 2,491 | 2,071 | 2,130 | 1,991 | 2,147 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2,3,4</sup>**

|                         |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015 | 2016 | 2017 | 2018 |
|-------------------------|---|-------|-------|-------|-------|-------|-------|------|------|------|------|
| Atlantic mackerel       | H | 0     | NA    | NA    | 0     | < 1   | NA    | < 1  | 0    | < 1  | NA   |
|                         | R | 2     | NA    | NA    | < 1   | < 1   | NA    | 0    | < 1  | 0    | NA   |
| Black sea bass          | H | 103   | 70    | 121   | 108   | 48    | 48    | 57   | 95   | 112  | 88   |
|                         | R | 803   | 708   | 580   | 605   | 512   | 528   | 526  | 780  | 485  | 371  |
| Bluefish                | H | 301   | 98    | 124   | 95    | 57    | 333   | 235  | 110  | 261  | 76   |
|                         | R | 751   | 210   | 396   | 400   | 161   | 802   | 464  | 359  | 612  | 536  |
| Drum (Atlantic croaker) | H | 983   | 208   | 213   | 202   | 530   | 806   | 335  | 25   | 66   | 12   |
|                         | R | 1,284 | 1,057 | 215   | 1,036 | 1,812 | 1,397 | 309  | 391  | 230  | 85   |
| Drum (weakfish)         | H | 9     | < 1   | < 1   | 11    | 16    | 7     | 2    | 1    | 1    | 2    |
|                         | R | 10    | 42    | 14    | 213   | 52    | 55    | 34   | 63   | 38   | 27   |
| Striped bass            | H | 65    | 61    | 44    | 51    | 71    | 26    | 42   | 6    | 28   | 4    |
|                         | R | 444   | 256   | 338   | 358   | 273   | 530   | 309  | 218  | 254  | 352  |
| Summer flounder         | H | 169   | 144   | 141   | 101   | 120   | 189   | 120  | 173  | 98   | 85   |
|                         | R | 1,957 | 1,669 | 1,330 | 556   | 518   | 651   | 431  | 557  | 591  | 513  |
| White perch             | H | 155   | 638   | 344   | 183   | 331   | 305   | 118  | 10   | 99   | 117  |
|                         | R | 455   | 1,232 | 876   | 534   | 1,139 | 186   | 355  | 46   | 179  | 416  |
| Wrasses (tautog)        | H | 324   | 182   | 118   | 95    | 97    | 132   | 29   | 46   | 32   | 9    |
|                         | R | 1,108 | 868   | 312   | 226   | 322   | 200   | 113  | 277  | 388  | 250  |
| Yellowfin tuna          | H | < 1   | < 1   | 1     | < 1   | 2     | 1     | 5    | < 1  | NA   | 1    |
|                         | R | < 1   | 0     | < 1   | 0     | < 1   | < 1   | < 1  | 0    | NA   | < 1  |

<sup>1</sup> Non-coastal data are not available because all of the state's residents are considered coastal county residents.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.<sup>4</sup> 'NA' = not available.

**2017 Delaware State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 65,634 (0.3%)       | 25,452 (0.3%)   | 400,714 (0.3%) | 22.0 (0.3%)                  | 31.9 (0.3%)                         | 75.0                              | ds  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>1,3</sup>**

|                                   |          | 2009 | 2010  | 2011  | 2012  | 2013 | 2014 | 2015 | 2016 | 2017  |
|-----------------------------------|----------|------|-------|-------|-------|------|------|------|------|-------|
| Seafood product prep. & packaging | Firms    | NA   | ds    | ds    | ds    | ds   | ds   | ds   | 3    | 5     |
|                                   | Receipts | NA   | ds    | ds    | ds    | ds   | ds   | ds   | 558  | 458   |
| Seafood sales, retail             | Firms    | 10   | 9     | 9     | 11    | 8    | 13   | 11   | 11   | 12    |
|                                   | Receipts | 813  | 1,107 | 1,226 | 1,333 | 520  | 452  | 479  | 608  | 2,868 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|                                   |                | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Establishments | 1     | 1     | 1     | 1     | 1     | 2     | 1     | 2     | NA    |
|                                   | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | ds    | 0     | NA    |
|                                   | Payroll        | ds    | ds    | ds    | ds    | ds    | ds    | ds    | 0     | NA    |
| Seafood sales, wholesale          | Establishments | 7     | 7     | 7     | 7     | 9     | 8     | 6     | 6     | 5     |
|                                   | Employees      | ds    | ds    | ds    | ds    | ds    | ds    | 54    | 56    | 67    |
|                                   | Payroll        | ds    | ds    | ds    | ds    | 3,020 | 2,381 | 2,404 | 2,707 | 3,072 |
| Seafood sales, retail             | Establishments | 16    | 15    | 18    | 16    | 17    | 17    | 14    | 12    | 12    |
|                                   | Employees      | 50    | 47    | 49    | ds    | 60    | 52    | 36    | 45    | 40    |
|                                   | Payroll        | 1,348 | 1,414 | 1,493 | 1,545 | 1,396 | 1,261 | 1,224 | 1,037 | 1,370 |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|  |                | 2009   | 2010   | 2011   | 2012  | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|-------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 2      | 2      | 3      | 4     | 4      | 6      | 6      | 5      | 4      |
|  | Employees      | ds     | ds     | ds     | 50    | 61     | 55     | 57     | 53     | 0      |
|  | Payroll        | ds     | ds     | ds     | 2,313 | 2,516  | 2,174  | 2,168  | 2,410  | 0      |
| Deep Sea Freight Transportation                | Establishments | 4      | 5      | 2      | 1     | 1      | 2      | 4      | 2      | NA     |
|  | Employees      | ds     | 120    | ds     | ds    | ds     | ds     | 98     | 0      | NA     |
|  | Payroll        | ds     | 10,768 | ds     | ds    | ds     | ds     | 8,771  | 0      | NA     |
| Deep Sea Passenger Transportation              | Establishments | NA     | 1      | NA     | NA    | 2      | 2      | 1      | 1      | NA     |
|  | Employees      | NA     | ds     | NA     | NA    | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | NA     | ds     | NA     | NA    | ds     | ds     | ds     | 0      | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 2      | 1      | NA     | NA    | NA     | NA     | 1      | 2      | 5      |
|  | Employees      | ds     | ds     | NA     | NA    | NA     | NA     | ds     | 0      | 38     |
|  | Payroll        | ds     | ds     | NA     | NA    | NA     | NA     | ds     | 0      | 4,534  |
| Port and Harbor Operations                     | Establishments | 2      | 3      | 3      | 4     | 3      | 2      | 2      | 2      | NA     |
|  | Employees      | ds     | 29     | 44     | ds    | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | ds     | 1,182  | 1,512  | ds    | ds     | ds     | ds     | 0      | NA     |
| Marine Cargo Handling                          | Establishments | 3      | 3      | 3      | 2     | 3      | 3      | 3      | 3      | 4      |
|  | Employees      | ds     | 434    | 511    | ds    | 565    | 541    | 577    | 540    | 513    |
|  | Payroll        | 16,952 | 16,835 | 19,203 | ds    | 20,698 | 22,789 | 23,370 | 22,994 | 25,453 |
| Navigational Services to Shipping              | Establishments | 8      | 8      | 8      | 8     | 8      | 10     | 10     | 11     | 12     |
|  | Employees      | 85     | 76     | 78     | ds    | 82     | 92     | 81     | 92     | 101    |
|  | Payroll        | 5,672  | 5,176  | 5,096  | 3,111 | 5,330  | 5,350  | 5,938  | 6,709  | 6,796  |
| Marinas  | Establishments | 16     | 19     | 17     | 18    | 19     | 18     | 18     | 18     | 15     |
|  | Employees      | ds     | 65     | ds     | 67    | 64     | 95     | 86     | 86     | 67     |
|  | Payroll        | 1,877  | 2,342  | 3,106  | 1,963 | 2,196  | 2,293  | 2,527  | 2,527  | 2,128  |

<sup>1</sup> ds = Data are suppressed.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> NA = Not applicable.

# Tables | Maryland





## Maryland | Commercial Fisheries

## 2018 Economic Impacts of the Maryland Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 16,456       | 2,518 | 582    | 928         | 4,910           | 302   | 110    | 151         |
| Commercial Harvesters              | 2,056        | 116   | 33     | 51          | 2,056           | 116   | 33     | 51          |
| Seafood Processors & Dealers       | 2,092        | 217   | 85     | 108         | 466             | 48    | 19     | 24          |
| Importers                          | 5,322        | 1,722 | 276    | 525         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 1,012        | 156   | 53     | 70          | 147             | 23    | 8      | 10          |
| Retail                             | 5,974        | 307   | 135    | 173         | 2,240           | 116   | 51     | 65          |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 70,803 | 95,417 | 80,797 | 83,093 | 78,170 | 89,724 | 84,157 | 87,136 | 75,952 | 65,583 |
| Finfish            | 11,053 | 9,789  | 11,305 | 14,703 | 12,745 | 18,609 | 12,769 | 15,710 | 13,493 | 10,995 |
| Shellfish          | 59,609 | 85,450 | 69,427 | 68,313 | 65,359 | 70,982 | 71,312 | 71,374 | 62,405 | 54,553 |
| Other              | 141    | 178    | 65     | 78     | 66     | 133    | 76     | 52     | 55     | 35     |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Atlantic croaker   | 444    | 507    | 482    | 689    | 455    | 492    | 342    | 179    | 138    | 77     |
| Black sea bass     | 451    | 590    | 507    | 421    | 710    | 834    | 792    | 896    | 1,236  | 1,254  |
| Blue crab          | 52,049 | 79,055 | 60,326 | 60,467 | 50,167 | 52,849 | 52,084 | 54,534 | 48,535 | 45,308 |
| Eastern oyster     | 3,849  | 4,385  | 3,691  | 5,710  | 13,827 | 15,687 | 15,093 | 12,265 | 10,473 | 6,741  |
| Menhaden           | 897    | 729    | 685    | 1,669  | 902    | 1,380  | 1,222  | 1,036  | 648    | 733    |
| Sea scallop        | 3,160  | 1,188  | 552    | 202    | 8      | 1,328  | 3,077  | 1,804  | 945    | 1,209  |
| Shad               | 23     | 164    | 118    | 151    | 146    | 486    | 361    | 233    | 3      | 566    |
| Shark              | 325    | 246    | 422    | 385    | 349    | 299    | 228    | 327    | 364    | 137    |
| Striped bass       | 5,180  | 5,425  | 5,623  | 6,172  | 8,043  | 8,092  | 6,194  | 7,131  | 7,061  | 6,022  |
| Summer flounder    | 550    | 541    | 463    | 380    | 541    | 598    | 597    | 668    | 564    | 608    |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 58,592 | 90,193 | 76,050 | 75,839 | 43,199 | 47,842 | 47,406 | 54,699 | 43,591 | 42,076 |
| Finfish            | 17,991 | 22,960 | 18,251 | 28,848 | 15,399 | 20,981 | 16,978 | 16,373 | 11,118 | 13,250 |
| Shellfish          | 40,481 | 67,114 | 57,669 | 46,836 | 27,668 | 26,751 | 30,365 | 38,285 | 32,419 | 28,795 |
| Other              | 119    | 120    | 130    | 155    | 132    | 109    | 63     | 41     | 54     | 31     |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Atlantic croaker   | 597    | 628    | 804    | 1,091  | 864    | 504    | 340    | 162    | 94     | 53     |
| Black sea bass     | 126    | 203    | 182    | 144    | 234    | 252    | 236    | 272    | 410    | 374    |
| Blue crab          | 38,801 | 66,262 | 51,163 | 43,741 | 24,797 | 24,690 | 28,759 | 36,734 | 30,655 | 27,822 |
| Eastern oyster     | 498    | 432    | 356    | 618    | 1,404  | 1,196  | 1,191  | 887    | 671    | 465    |
| Menhaden           | 9,567  | 15,467 | 8,016  | 16,383 | 7,674  | 8,363  | 8,786  | 6,473  | 3,568  | 4,388  |
| Sea scallop        | 521    | 153    | 58     | 20     | 1      | 110    | 248    | 151    | 98     | 144    |
| Shad               | 48     | 425    | 974    | 1,514  | 1,449  | 1,639  | 2,145  | 1,148  | 3      | 3,289  |
| Shark              | 590    | 659    | 1,434  | 1,334  | 1,426  | 1,304  | 1,259  | 1,669  | 2,039  | 787    |
| Striped bass       | 2,812  | 2,510  | 2,343  | 2,285  | 1,981  | 2,353  | 1,708  | 1,718  | 1,829  | 1,760  |
| Summer flounder    | 214    | 261    | 259    | 165    | 194    | 192    | 188    | 159    | 137    | 143    |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Atlantic croaker | 0.74 | 0.81  | 0.60  | 0.63  | 0.53  | 0.98  | 1.01  | 1.10  | 1.47  | 1.46  |
| Black sea bass   | 3.59 | 2.90  | 2.78  | 2.92  | 3.03  | 3.31  | 3.35  | 3.30  | 3.02  | 3.35  |
| Blue crab        | 1.34 | 1.19  | 1.18  | 1.38  | 2.02  | 2.14  | 1.81  | 1.48  | 1.58  | 1.63  |
| Eastern oyster   | 7.73 | 10.15 | 10.37 | 9.24  | 9.85  | 13.11 | 12.67 | 13.83 | 15.60 | 14.50 |
| Menhaden         | 0.09 | 0.05  | 0.09  | 0.10  | 0.12  | 0.17  | 0.14  | 0.16  | 0.18  | 0.17  |
| Sea scallop      | 6.06 | 7.77  | 9.54  | 10.23 | 12.77 | 12.11 | 12.40 | 11.94 | 9.68  | 8.38  |
| Shad             | 0.47 | 0.38  | 0.12  | 0.10  | 0.10  | 0.30  | 0.17  | 0.20  | 1.18  | 0.17  |
| Shark            | 0.55 | 0.37  | 0.29  | 0.29  | 0.24  | 0.23  | 0.18  | 0.20  | 0.18  | 0.17  |
| Striped bass     | 1.84 | 2.16  | 2.40  | 2.70  | 4.06  | 3.44  | 3.63  | 4.15  | 3.86  | 3.42  |
| Summer flounder  | 2.57 | 2.07  | 1.78  | 2.30  | 2.80  | 3.11  | 3.18  | 4.20  | 4.10  | 4.24  |

**2018 Economic Impacts of Maryland Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 389   | 39,299  | 15,212  | 24,169      |
|                              | Private Boat | 1,120 | 112,728 | 41,572  | 71,246      |
|                              | Shore        | 1,252 | 107,950 | 39,607  | 71,589      |
| Total Durable Expenditures   |              | 4,931 | 579,496 | 238,441 | 389,099     |
| Total State Economic Impacts |              | 7,692 | 839,473 | 334,833 | 556,102     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 24,607            | Fishing Tackle             | 132,454                    |
| Private Boat                                    | 116,962           | Other Equipment            | 62,776                     |
| Shore   | 94,655            | Boat Expenses              | 348,124                    |
| Total   | 236,224           | Vehicle Expenses           | 47,073                     |
|   |                   | Second Home Expenses       | 2,712                      |
|   |                   | Total Durable Expenditures | 593,138                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 829,362                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010  | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|-------|------|------|------|------|------|------|------|------|
| Coastal       | 514  | 552   | 415  | 374  | 404  | 413  | 364  | 453  | 353  | 406  |
| Non-Coastal   | 43   | 54    | 49   | 40   | 36   | 41   | 31   | 23   | 41   | 30   |
| Out-of-State  | 327  | 462   | 372  | 258  | 329  | 338  | 352  | 352  | 265  | 274  |
| Total Anglers | 884  | 1,068 | 836  | 672  | 769  | 792  | 748  | 829  | 659  | 709  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 189   | 136   | 154   | 156   | 153   | 189   | 177   | 131   | 211   | 145   |
| Private     | 4,345 | 4,897 | 4,708 | 5,150 | 4,861 | 4,167 | 4,366 | 4,160 | 3,415 | 2,692 |
| Shore       | 4,309 | 4,829 | 4,859 | 4,234 | 4,695 | 5,038 | 4,586 | 5,073 | 4,717 | 3,924 |
| Total Trips | 8,843 | 9,862 | 9,721 | 9,539 | 9,710 | 9,394 | 9,129 | 9,364 | 8,343 | 6,762 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                         |   | 2009  | 2010  | 2011  | 2012   | 2013   | 2014  | 2015  | 2016   | 2017  | 2018  |
|-------------------------|---|-------|-------|-------|--------|--------|-------|-------|--------|-------|-------|
| Black sea bass          | H | 35    | 42    | 79    | 161    | 27     | 63    | 89    | 207    | 149   | 154   |
|                         | R | 1,080 | 2,027 | 811   | 1,323  | 768    | 956   | 763   | 1,054  | 865   | 1,282 |
| Bluefish                | H | 1,517 | 739   | 731   | 349    | 119    | 396   | 287   | 212    | 176   | 275   |
|                         | R | 1,813 | 572   | 1,037 | 521    | 723    | 491   | 662   | 556    | 197   | 418   |
| Drum (Atlantic croaker) | H | 2,587 | 2,995 | 1,531 | 2,566  | 2,309  | 2,197 | 1,739 | 659    | 424   | 305   |
|                         | R | 2,425 | 3,061 | 937   | 7,091  | 7,557  | 2,807 | 1,236 | 727    | 2,829 | 203   |
| Drum (spot)             | H | 4,588 | 2,840 | 2,125 | 2,121  | 2,456  | 4,396 | 1,352 | 1,145  | 3,251 | 1,210 |
|                         | R | 1,901 | 2,773 | 783   | 3,292  | 7,621  | 2,207 | 642   | 713    | 2,280 | 943   |
| Striped bass            | H | 1,105 | 1,152 | 1,113 | 720    | 1,185  | 1,640 | 1,112 | 1,546  | 1,092 | 993   |
|                         | R | 4,011 | 5,390 | 3,484 | 9,001  | 6,676  | 8,304 | 8,524 | 13,781 | 7,788 | 7,458 |
| Summer flounder         | H | 178   | 76    | 47    | 99     | 119    | 118   | 98    | 40     | 57    | 48    |
|                         | R | 2,553 | 4,082 | 1,632 | 852    | 915    | 1,358 | 719   | 1,712  | 862   | 793   |
| Weakfish drum           | H | 10    | 13    | < 1   | 39     | 4      | 2     | 13    | 2      | 9     | 0     |
|                         | R | 30    | 417   | 51    | 72     | 20     | 27    | 341   | 161    | 41    | 5     |
| White perch             | H | 1,425 | 7,239 | 4,341 | 5,820  | 6,827  | 2,746 | 3,817 | 6,028  | 4,380 | 2,808 |
|                         | R | 3,857 | 8,715 | 7,837 | 16,250 | 18,587 | 7,879 | 7,200 | 10,339 | 7,388 | 4,141 |
| Wrasses (tautog)        | H | 107   | 290   | 64    | 20     | 23     | 1     | 12    | 4      | 19    | 18    |
|                         | R | 383   | 1,318 | 340   | 651    | 325    | 5     | 267   | 530    | 761   | 215   |
| Yellowfin tuna          | H | 7     | 1     | < 1   | NA     | 4      | 17    | 12    | 23     | 112   | < 1   |
|                         | R | 2     | < 1   | 0     | NA     | 10     | 4     | 0     | 24     | 10    | < 1   |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> 'NA' = not available.

## 2017 Maryland State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 497,161 (1.9%)      | 139,446 (1.8%)  | 2,335,479 (1.8%) | 127 (1.9%)                   | 214 (2.1%)                          | 401                               | 0.61  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 42    | 43    | 55    | 67    | 49    | 60    | 53    | 64    | 70    |
|                                   | Receipts | 2,268 | 2,138 | 2,374 | 3,030 | 3,158 | 3,230 | 3,133 | 3,440 | 3,676 |
| Seafood sales, retail             | Firms    | 94    | 85    | 86    | 96    | 95    | 87    | 87    | 91    | 79    |
|                                   | Receipts | 8,819 | 6,177 | 7,396 | 6,454 | 6,147 | 8,437 | 8,104 | 9,426 | 8,653 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 19     | 18     | 17     | 16     | 16     | 17     | 17     | 19     | 15     |
|                                   | Employees      | 245    | 273    | 264    | 266    | 309    | 284    | 288    | 260    | 280    |
|                                   | Payroll        | 13,049 | 12,652 | 12,773 | 13,587 | 12,455 | 13,131 | 13,631 | 17,775 | 18,251 |
| Seafood sales, wholesale          | Establishments | 61     | 63     | 57     | 60     | 58     | 58     | 53     | 60     | 54     |
|                                   | Employees      | 777    | 795    | 775    | 724    | 636    | 630    | 605    | 654    | 752    |
|                                   | Payroll        | 39,055 | 39,067 | 38,971 | 34,194 | 30,119 | 31,503 | 33,739 | 36,196 | 41,754 |
| Seafood sales, retail             | Establishments | 87     | 87     | 88     | 87     | 87     | 83     | 79     | 85     | 77     |
|                                   | Employees      | 485    | 526    | 562    | 575    | 574    | 562    | 539    | 561    | 522    |
|                                   | Payroll        | 11,499 | 11,810 | 12,883 | 13,027 | 13,623 | 13,907 | 15,033 | 15,910 | 15,031 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 38     | 35     | 35     | 34     | 31     | 35     | 36     | 36     | 31     |
|  | Employees      | 416    | ds     | 633    | 378    | 371    | 449    | 456    | 482    | 474    |
|  | Payroll        | 16,238 | ds     | 36,675 | 14,619 | 16,822 | 18,130 | 20,599 | 21,425 | 20,616 |
| Deep Sea Freight Transportation                | Establishments | 15     | 15     | 16     | 14     | 10     | 11     | 11     | 9      | 10     |
|  | Employees      | 255    | 390    | 329    | 245    | 139    | 135    | 118    | 140    | 119    |
|  | Payroll        | 20,722 | 24,185 | 25,071 | 17,938 | 10,041 | 11,600 | 11,097 | 10,396 | 10,504 |
| Deep Sea Passenger Transportation              | Establishments | 2      | 1      | NA     | NA     | 1      | NA     | NA     | NA     | NA     |
|  | Employees      | ds     | ds     | NA     | NA     | ds     | NA     | NA     | NA     | NA     |
|  | Payroll        | ds     | ds     | NA     | NA     | ds     | NA     | NA     | NA     | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 7      | 8      | 6      | 4      | 4      | 8      | 6      | 8      | 5      |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | ds     | ds     | ds     | ds     | 538    | ds     | ds     | 0      | 0      |
| Port and Harbor Operations                     | Establishments | 4      | 5      | 5      | 22     | 16     | 17     | 15     | 14     | 19     |
|  | Employees      | ds     | ds     | ds     | 1,875  | 962    | 1,220  | 1,349  | 1,080  | 1,211  |
|  | Payroll        | ds     | ds     | ds     | 93,001 | 44,436 | 57,543 | 55,375 | 52,510 | 62,934 |
| Marine Cargo Handling                          | Establishments | 16     | 17     | 17     | 6      | 12     | 12     | 12     | 13     | 11     |
|  | Employees      | 1,599  | 2,742  | 1,924  | ds     | 1,519  | 1,132  | 1,140  | 1,424  | 1,292  |
|  | Payroll        | 46,727 | 95,182 | 86,680 | ds     | 60,500 | 60,962 | 81,751 | 75,022 | 78,142 |
| Navigational Services to Shipping              | Establishments | 11     | 10     | 11     | 10     | 11     | 10     | 11     | 11     | 16     |
|  | Employees      | 77     | 84     | 84     | ds     | 245    | 131    | 125    | 114    | 194    |
|  | Payroll        | 3,807  | 4,015  | 4,259  | ds     | 17,066 | 6,345  | 6,411  | 6,055  | 11,241 |
| Marinas  | Establishments | 176    | 175    | 172    | 159    | 170    | 166    | 172    | 171    | 161    |
|  | Employees      | 1,289  | 1,275  | 1,294  | 1,276  | 1,328  | 1,366  | 1,380  | 1,396  | 1,234  |
|  | Payroll        | 45,483 | 43,508 | 43,330 | 43,531 | 45,540 | 47,443 | 50,633 | 51,934 | 47,963 |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = not applicable.

# Tables | New Jersey



**2018 Economic Impacts of the New Jersey Seafood Industry (millions of dollars)**

|                                    | With Imports |        |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 49,398       | 10,266 | 2,109  | 3,555       | 5,372           | 512   | 169    | 243         |
| Commercial Harvesters              | 1,996        | 274    | 72     | 117         | 1,996           | 274   | 72     | 117         |
| Seafood Processors & Dealers       | 1,575        | 171    | 65     | 85          | 512             | 56    | 21     | 28          |
| Importers                          | 24,930       | 8,068  | 1,293  | 2,459       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 4,061        | 760    | 244    | 332         | 147             | 28    | 9      | 12          |
| Retail                             | 16,835       | 993    | 435    | 562         | 2,717           | 154   | 67     | 87          |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 143,836 | 178,502 | 220,156 | 187,689 | 123,818 | 134,409 | 152,718 | 174,880 | 154,885 | 151,881 |
| Finfish            | 23,267  | 22,950  | 26,791  | 28,628  | 25,889  | 24,921  | 29,077  | 25,956  | 33,442  | 30,697  |
| Shellfish          | 120,569 | 155,552 | 193,365 | 159,061 | 97,929  | 109,488 | 123,641 | 148,924 | 121,443 | 121,183 |
| Other              | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| American lobster   | NA      | 2,911   | 3,088   | 3,938   | 2,797   | 2,380   | 2,248   | 1,883   | 2,245   | 2,052   |
| Atlantic herring   | 1,507   | 416     | 414     | 145     | 401     | 615     | 308     | 292     | 482     | 354     |
| Atlantic mackerel  | 1,539   | 812     | 53      | 577     | 18      | 12      | 535     | 79      | 596     | 1,298   |
| Black sea bass     | 592     | 996     | 970     | 1,054   | 1,370   | 1,603   | 1,763   | 1,945   | 2,823   | 2,809   |
| Blue crab          | 2       | 12,028  | 9,429   | 10,011  | NA      | 4,157   | 8,699   | 5,668   | 8,946   | 8,607   |
| Goosefish          | 3,018   | 2,752   | 3,654   | 3,301   | 2,453   | 2,428   | 2,364   | 2,470   | 1,558   | 1,349   |
| Sea scallop        | 90,153  | 109,120 | 142,510 | 110,560 | 65,190  | 87,745  | 97,855  | 123,362 | 99,253  | 83,181  |
| Squid              | 2,805   | 7,242   | 12,806  | 8,949   | 5,804   | 2,643   | 2,798   | 7,209   | 10,437  | 14,464  |
| Summer flounder    | 3,376   | 4,553   | 5,461   | 5,433   | 4,899   | 4,862   | 5,059   | 5,442   | 4,296   | 4,549   |
| Tilefish           | 944     | 1,026   | 1,063   | 1,168   | 1,154   | 1,760   | 1,604   | 1,261   | 1,217   | 1,190   |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014   | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|
| Total              | 136,128 | 161,377 | 187,115 | 180,388 | 113,434 | 98,698 | 131,087 | 114,034 | 162,684 | 171,755 |
| Finfish            | 73,210  | 74,557  | 94,621  | 104,118 | 61,364  | 64,780 | 94,006  | 70,888  | 117,688 | 107,983 |
| Shellfish          | 62,917  | 86,820  | 92,494  | 76,270  | 52,070  | 33,918 | 37,081  | 43,146  | 44,996  | 63,772  |
| Other              | 0       | 0       | 0       | 0       | 0       | 0      | 0       | 0       | 0       | 0       |
| <b>Key Species</b> |         |         |         |         |         |        |         |         |         |         |
| American lobster   | NA      | 693     | 698     | 919     | 660     | 526    | 445     | 350     | 409     | 345     |
| Atlantic herring   | 13,692  | 4,107   | 2,380   | 1,106   | 2,344   | 4,087  | 3,428   | 2,798   | 3,353   | 3,374   |
| Atlantic mackerel  | 10,255  | 4,633   | 106     | 1,997   | 46      | 17     | 2,188   | 306     | 2,778   | 7,108   |
| Black sea bass     | 204     | 305     | 294     | 311     | 421     | 494    | 468     | 526     | 899     | 700     |
| Blue crab          | 2       | 9,458   | 9,611   | 7,396   | NA      | 3,233  | 7,247   | 6,816   | 6,410   | 5,435   |
| Goosefish          | 2,692   | 2,024   | 2,275   | 2,212   | 2,231   | 2,172  | 1,903   | 1,885   | 1,388   | 1,719   |
| Sea scallop        | 14,045  | 14,171  | 14,545  | 11,379  | 5,640   | 7,133  | 7,847   | 10,491  | 10,961  | 9,206   |
| Squid              | 3,450   | 21,893  | 25,956  | 17,521  | 9,189   | 2,773  | 2,647   | 8,512   | 26,749  | 30,730  |
| Summer flounder    | 1,799   | 2,166   | 2,831   | 2,269   | 2,004   | 1,826  | 1,682   | 1,297   | 962     | 1,046   |
| Tilefish           | 451     | 396     | 360     | 406     | 377     | 582    | 434     | 335     | 438     | 411     |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                   | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 |
|-------------------|------|------|------|------|-------|-------|-------|-------|------|------|
| American lobster  | NA   | 4.20 | 4.42 | 4.28 | 4.23  | 4.52  | 5.05  | 5.38  | 5.49 | 5.96 |
| Atlantic herring  | 0.11 | 0.10 | 0.17 | 0.13 | 0.17  | 0.15  | 0.09  | 0.10  | 0.14 | 0.10 |
| Atlantic mackerel | 0.15 | 0.18 | 0.50 | 0.29 | 0.40  | 0.73  | 0.24  | 0.26  | 0.21 | 0.18 |
| Black sea bass    | 2.90 | 3.26 | 3.30 | 3.39 | 3.25  | 3.25  | 3.76  | 3.70  | 3.14 | 4.01 |
| Blue crab         | 0.90 | 1.27 | 0.98 | 1.35 | NA    | 1.29  | 1.20  | 0.83  | 1.40 | 1.58 |
| Goosefish         | 1.12 | 1.36 | 1.61 | 1.49 | 1.10  | 1.12  | 1.24  | 1.31  | 1.12 | 0.78 |
| Sea scallop       | 6.42 | 7.70 | 9.80 | 9.72 | 11.56 | 12.30 | 12.47 | 11.76 | 9.05 | 9.04 |
| Squid             | 0.81 | 0.33 | 0.49 | 0.51 | 0.63  | 0.95  | 1.06  | 0.85  | 0.39 | 0.47 |
| Summer flounder   | 1.88 | 2.10 | 1.93 | 2.39 | 2.44  | 2.66  | 3.01  | 4.20  | 4.47 | 4.35 |
| Tilefish          | 2.10 | 2.59 | 2.95 | 2.88 | 3.06  | 3.02  | 3.69  | 3.76  | 2.78 | 2.89 |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of New Jersey Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 464    | 49,439    | 18,030  | 31,067      |
|                              | Private Boat | 1,891  | 322,462   | 127,590 | 204,737     |
|                              | Shore        | 1,391  | 198,335   | 86,196  | 132,974     |
| Total Durable Expenditures   |              | 10,649 | 1,329,984 | 582,861 | 902,905     |
| Total State Economic Impacts |              | 14,395 | 1,900,220 | 814,677 | 1,271,683   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 30,744            | Fishing Tackle             | 277,712                    |
| Private Boat                                    | 278,482           | Other Equipment            | 82,854                     |
| Shore   | 158,074           | Boat Expenses              | 629,689                    |
| Total   | 467,299           | Vehicle Expenses           | 65,949                     |
|   |                   | Second Home Expenses       | 3,543                      |
|   |                   | Total Durable Expenditures | 1,059,748                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 1,527,047                  |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009  | 2010  | 2011  | 2012  | 2013 | 2014  | 2015 | 2016 | 2017 | 2018 |
|---------------|-------|-------|-------|-------|------|-------|------|------|------|------|
| Coastal       | 656   | 776   | 687   | 662   | 581  | 607   | 515  | 507  | 447  | 411  |
| Non-Coastal   | 35    | 36    | 23    | 27    | 20   | 17    | 24   | 32   | 16   | 17   |
| Out-of-State  | 454   | 449   | 357   | 431   | 330  | 566   | 448  | 378  | 253  | 322  |
| Total Anglers | 1,145 | 1,261 | 1,067 | 1,121 | 931  | 1,189 | 987  | 916  | 716  | 750  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 436    | 331    | 370    | 388    | 532    | 494    | 450    | 234    | 215    | 289    |
| Private     | 7,373  | 8,126  | 7,129  | 7,107  | 6,476  | 6,260  | 5,013  | 4,741  | 4,848  | 4,432  |
| Shore       | 9,850  | 10,228 | 10,033 | 10,659 | 8,759  | 10,259 | 9,021  | 8,877  | 7,225  | 7,772  |
| Total Trips | 17,659 | 18,685 | 17,532 | 18,153 | 15,767 | 17,012 | 14,485 | 13,852 | 12,288 | 12,493 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|                  |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017  | 2018   |
|------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|
| Black sea bass   | H | 1,489  | 2,006  | 285    | 1,364  | 934    | 639    | 440    | 517    | 1,500 | 1,040  |
|                  | R | 7,938  | 11,907 | 4,454  | 11,111 | 8,612  | 4,789  | 4,984  | 6,239  | 7,939 | 5,613  |
| Bluefin tuna     | H | 32     | 16     | 13     | < 1    | 30     | 11     | 2      | 5      | 22    | 23     |
|                  | R | 5      | 20     | 31     | 0      | 0      | 2      | 2      | 9      | 22    | 30     |
| Bluefish         | H | 2,161  | 3,036  | 3,934  | 3,133  | 2,322  | 4,557  | 1,765  | 3,282  | 3,047 | 1,421  |
|                  | R | 6,408  | 6,367  | 6,867  | 6,407  | 3,540  | 7,411  | 4,001  | 7,084  | 7,677 | 2,512  |
| Drum (weakfish)  | H | 23     | 4      | 8      | 277    | 90     | 16     | 73     | 12     | 79    | 16     |
|                  | R | 205    | 240    | 288    | 1,384  | 331    | 194    | 598    | 278    | 147   | 41     |
| Red hake         | H | 338    | 196    | 220    | 71     | 104    | 218    | 51     | 41     | 58    | 165    |
|                  | R | 40     | 71     | 29     | 259    | 157    | 33     | 17     | 13     | 57    | 93     |
| Striped bass     | H | 1,141  | 1,091  | 1,039  | 742    | 1,324  | 502    | 600    | 660    | 626   | 465    |
|                  | R | 3,503  | 2,436  | 2,447  | 1,822  | 4,349  | 2,840  | 2,440  | 1,808  | 2,317 | 2,756  |
| Summer flounder  | H | 1,721  | 1,318  | 1,969  | 3,086  | 3,450  | 2,418  | 1,180  | 1,456  | 1,211 | 1,045  |
|                  | R | 23,087 | 28,058 | 24,558 | 22,080 | 19,160 | 22,209 | 10,821 | 12,299 | 7,785 | 10,371 |
| Winter flounder  | H | 55     | 37     | 122    | < 1    | 21     | 52     | 3      | 56     | 8     | 14     |
|                  | R | 81     | 60     | 92     | 2      | 89     | 19     | 102    | 21     | 15    | 13     |
| Wrasses (tautog) | H | 420    | 717    | 314    | 92     | 443    | 533    | 339    | 190    | 569   | 385    |
|                  | R | 2,649  | 2,491  | 2,518  | 1,754  | 1,811  | 2,040  | 1,614  | 1,984  | 3,048 | 2,572  |
| Yellowfin tuna   | H | 19     | 84     | 18     | 183    | 148    | 22     | 13     | 29     | 33    | 147    |
|                  | R | 46     | < 1    | < 1    | 8      | 6      | 0      | 23     | 20     | 4     | 78     |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.



## 2017 New Jersey State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 716,918 (2.8%)      | 233,907 (3%)    | 3,679,443 (2.9%) | 220 (3.3%)                   | 320 (3.1%)                          | 602                               | 0.93  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                       |          | 2009   | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------|----------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product       | Firms    | 33     | 47    | 29    | 35    | 48    | 45    | 39    | 44    | 44    |
| prep. & packaging     | Receipts | 3,670  | 3,613 | 3,447 | 3,565 | 4,981 | 5,736 | 3,603 | 3,811 | 3,701 |
| Seafood sales, retail | Firms    | 86     | 66    | 68    | 77    | 74    | 74    | 70    | 68    | 68    |
|                       | Receipts | 11,131 | 8,265 | 8,049 | 8,972 | 8,257 | 7,135 | 7,711 | 7,042 | 9,733 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 13     | 11     | 12     | 11     | 13     | 13     | 15     | 13     | 18     |
| prep. & packaging        | Employees      | 661    | 482    | 518    | 404    | 671    | 647    | 715    | 452    | 716    |
|                          | Payroll        | 22,025 | 17,427 | 17,940 | 13,747 | 22,764 | 21,933 | 25,929 | 17,030 | 27,436 |
| Seafood sales, wholesale | Establishments | 83     | 90     | 91     | 82     | 80     | 78     | 78     | 73     | 73     |
|                          | Employees      | 858    | 848    | 935    | 1,058  | 765    | 795    | 784    | 753    | 775    |
|                          | Payroll        | 37,348 | 38,065 | 40,103 | 44,033 | 37,405 | 36,773 | 39,900 | 41,239 | 42,765 |
| Seafood sales, retail    | Establishments | 106    | 108    | 109    | 114    | 114    | 108    | 115    | 116    | 115    |
|                          | Employees      | 332    | 332    | 332    | 382    | 419    | 434    | 446    | 471    | 428    |
|                          | Payroll        | 9,126  | 9,094  | 9,264  | 11,561 | 11,657 | 12,520 | 12,591 | 13,351 | 12,696 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 25      | 24      | 23      | 21      | 24      | 24      | 23      | 24      | 23      |
|  | Employees      | 1,188   | 1,056   | 864     | 901     | 917     | 1,080   | 1,329   | 1,417   | 1,594   |
|  | Payroll        | 42,909  | 37,920  | 39,810  | 36,334  | 41,886  | 50,459  | 59,130  | 64,354  | 78,326  |
| Deep Sea Freight Transportation                | Establishments | 26      | 26      | 26      | 25      | 20      | 21      | 24      | 22      | 18      |
|  | Employees      | 1,045   | ds      | ds      | 390     | 225     | 212     | 193     | 187     | 137     |
|  | Payroll        | 66,547  | 78,898  | 81,936  | 27,481  | 12,263  | 11,271  | 11,522  | 11,988  | 9,580   |
| Deep Sea Passenger Transportation              | Establishments | 3       | 2       | 2       | 2       | NA      | 2       | 1       | 1       | NA      |
|  | Employees      | ds      | ds      | ds      | ds      | NA      | ds      | ds      | 0       | NA      |
|  | Payroll        | ds      | ds      | ds      | ds      | NA      | ds      | ds      | 0       | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 19      | 18      | 20      | 16      | 16      | 13      | 13      | 15      | 15      |
|  | Employees      | 594     | 600     | 508     | 402     | 367     | 365     | 414     | 404     | 419     |
|  | Payroll        | 41,925  | 44,246  | 40,587  | 32,007  | 32,431  | 33,308  | 37,888  | 38,330  | 45,683  |
| Port and Harbor Operations                     | Establishments | 6       | 11      | 7       | 25      | 18      | 18      | 17      | 18      | 14      |
|  | Employees      | 54      | 124     | 163     | ds      | ds      | ds      | 106     | 105     | 79      |
|  | Payroll        | 5,548   | 10,463  | 16,933  | 139,276 | 5,995   | 6,334   | 6,305   | 6,202   | 5,457   |
| Marine Cargo Handling                          | Establishments | 22      | 21      | 22      | 15      | 20      | 21      | 20      | 20      | 20      |
|  | Employees      | 3,479   | 3,292   | 3,744   | 2,582   | 6,912   | 6,082   | 5,005   | 4,692   | 4,454   |
|  | Payroll        | 230,886 | 260,894 | 273,636 | 203,148 | 538,991 | 563,746 | 521,401 | 519,594 | 553,019 |
| Navigational Services to Shipping              | Establishments | 19      | 16      | 17      | 18      | 18      | 18      | 20      | 18      | 23      |
|  | Employees      | 133     | 75      | 110     | 96      | 106     | 92      | 88      | 75      | 123     |
|  | Payroll        | 6,638   | 6,125   | 5,619   | 5,983   | 6,057   | 5,597   | 6,914   | 5,851   | 7,635   |
| Marinas  | Establishments | 214     | 212     | 206     | 210     | 206     | 190     | 196     | 194     | 191     |
|  | Employees      | 784     | 781     | 773     | 811     | 787     | 737     | 776     | 826     | 811     |
|  | Payroll        | 35,811  | 35,475  | 34,675  | 35,760  | 37,606  | 36,583  | 38,469  | 40,971  | 41,403  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = not available.

# Tables | New York



**2018 Economic Impacts of the New York Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 43,674       | 6,708 | 1,388  | 2,330       | 2,523           | 138   | 48     | 67          |
| Commercial Harvesters              | 1,234        | 70    | 20     | 31          | 1,234           | 70    | 20     | 31          |
| Seafood Processors & Dealers       | 990          | 167   | 64     | 83          | 93              | 16    | 6      | 8           |
| Importers                          | 16,460       | 5,327 | 854    | 1,624       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 4,790        | 406   | 137    | 185         | 91              | 8     | 3      | 4           |
| Retail                             | 20,200       | 739   | 314    | 408         | 1,106           | 46    | 19     | 25          |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)**

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 47,971 | 49,693 | 50,544 | 54,994 | 57,274 | 55,019 | 44,717 | 50,345 | 46,157 | 46,821 |
| Finfish            | 17,307 | 20,416 | 22,384 | 23,598 | 23,260 | 19,715 | 19,395 | 19,260 | 18,139 | 15,889 |
| Shellfish          | 30,665 | 29,276 | 28,161 | 31,397 | 34,014 | 35,304 | 25,322 | 31,085 | 28,019 | 30,932 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| American lobster   | 2,620  | 3,165  | 1,398  | 999    | 938    | 985    | 711    | 1,037  | 761    | 658    |
| Atlantic surf clam | 5,858  | 3,929  | 545    | 3,096  | 2,410  | NA     | 2,115  | 2,507  | 1,465  | 1,019  |
| Eastern oyster     | 1,428  | 2,047  | 2,174  | 2,227  | 4,149  | 9,372  | 9,001  | NA     | 1,442  | 1,666  |
| Loligo squid       | 4,167  | 4,516  | 7,250  | 8,648  | 5,949  | 5,448  | 5,413  | 7,830  | 4,924  | 7,946  |
| Quahog clam        | 8,397  | 7,774  | 6,905  | 9,218  | 13,475 | 11,777 | NA     | 11,957 | 11,678 | 9,573  |
| Scups and porgies  | 1,887  | 2,114  | 2,554  | 3,536  | 2,971  | 2,313  | 3,138  | 2,897  | 2,492  | 2,800  |
| Sea scallop        | 5,018  | 3,778  | 4,960  | 4,083  | 2,602  | 2,963  | 978    | 3,783  | 2,136  | 1,361  |
| Softshell clam     | 700    | 710    | 351    | 332    | 848    | 982    | 2,854  | 1,137  | 596    | 603    |
| Summer flounder    | 3,087  | 3,550  | 3,732  | 3,653  | 3,197  | 2,997  | 3,043  | 2,527  | 2,402  | 2,219  |
| Tilefishes         | 3,262  | 4,077  | 4,525  | 4,260  | 4,675  | 4,255  | 3,656  | 2,985  | 3,329  | 3,651  |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 34,100 | 33,679 | 31,938 | 37,044 | 34,351 | 25,024 | 26,300 | 29,792 | 24,548 | 22,786 |
| Finfish            | 15,880 | 18,415 | 18,464 | 19,115 | 18,446 | 15,636 | 15,706 | 15,499 | 14,790 | 12,212 |
| Shellfish          | 18,221 | 15,263 | 13,474 | 17,929 | 15,905 | 9,387  | 10,593 | 14,293 | 9,758  | 10,574 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| American lobster   | 732    | 814    | 344    | 550    | 497    | 223    | 147    | 219    | 150    | 113    |
| Atlantic surf clam | 8,799  | 5,857  | 809    | 4,590  | 3,452  | NA     | 3,110  | 3,677  | 2,167  | 1,518  |
| Eastern oyster     | 64     | 81     | 98     | 108    | 204    | 422    | 787    | NA     | 273    | 316    |
| Loligo             | 4,098  | 3,900  | 5,630  | 7,838  | 4,985  | 5,138  | 4,259  | 6,303  | 3,315  | 4,901  |
| Quahog clams       | 1,410  | 1,216  | 1,131  | 1,299  | 1,932  | 1,781  | NA     | 2,174  | 2,027  | 1,787  |
| Scups and porgies  | 1,851  | 2,691  | 3,735  | 4,307  | 4,575  | 3,175  | 4,050  | 3,504  | 3,465  | 3,354  |
| Sea scallop        | 918    | 508    | 522    | 430    | 256    | 262    | 87     | 398    | 251    | 157    |
| Softshell clam     | 114    | 116    | 57     | 54     | 138    | 160    | 499    | 243    | 127    | 129    |
| Summer flounder    | 1,142  | 1,364  | 1,517  | 1,238  | 1,033  | 833    | 830    | 604    | 491    | 463    |
| Tilefishes         | 1,435  | 1,586  | 1,521  | 1,413  | 1,468  | 1,383  | 936    | 745    | 1,051  | 1,161  |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                    | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016 | 2017 | 2018 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| American lobster   | 3.58  | 3.89  | 4.06  | 1.81  | 1.89  | 4.42  | 4.82  | 4.74 | 5.06 | 5.84 |
| Atlantic surf clam | 0.67  | 0.67  | 0.67  | 0.67  | 0.70  | NaN   | 0.68  | 0.68 | 0.68 | 0.67 |
| Eastern oyster     | 22.23 | 25.41 | 22.23 | 20.58 | 20.32 | 22.23 | 11.43 | NaN  | 5.29 | 5.28 |
| Loligo             | 1.02  | 1.16  | 1.29  | 1.10  | 1.19  | 1.06  | 1.27  | 1.24 | 1.49 | 1.62 |
| Quahog clams       | 5.96  | 6.39  | 6.10  | 7.10  | 6.97  | 6.61  | NaN   | 5.50 | 5.76 | 5.36 |
| Scups and porgies  | 1.02  | 0.79  | 0.68  | 0.82  | 0.65  | 0.73  | 0.77  | 0.83 | 0.72 | 0.83 |
| Sea scallop        | 5.47  | 7.44  | 9.50  | 9.50  | 10.18 | 11.33 | 11.21 | 9.51 | 8.50 | 8.66 |
| Softshell clam     | 6.13  | 6.13  | 6.13  | 6.12  | 6.13  | 6.13  | 5.73  | 4.69 | 4.69 | 4.69 |
| Summer flounder    | 2.70  | 2.60  | 2.46  | 2.95  | 3.09  | 3.60  | 3.67  | 4.19 | 4.89 | 4.80 |
| Tilefishes         | 2.27  | 2.57  | 2.97  | 3.01  | 3.18  | 3.08  | 3.90  | 4.01 | 3.17 | 3.14 |

**2018 Economic Impacts of New York Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 466    | 50,273    | 19,138  | 32,466      |
|                              | Private Boat | 2,312  | 190,882   | 85,045  | 148,751     |
|                              | Shore        | 1,172  | 96,219    | 43,590  | 75,059      |
| Total Durable Expenditures   |              | 6,410  | 786,548   | 331,490 | 560,868     |
| Total State Economic Impacts |              | 10,360 | 1,123,921 | 479,264 | 817,145     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 35,173            | Fishing Tackle             | 194,289                    |
| Private Boat                                    | 228,732           | Other Equipment            | 66,371                     |
| Shore   | 99,867            | Boat Expenses              | 443,469                    |
| Total   | 363,771           | Vehicle Expenses           | 35,234                     |
|   |                   | Second Home Expenses       | 569                        |
|   |                   | Total Durable Expenditures | 739,932                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 1,103,703                  |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 638  | 646  | 497  | 533  | 595  | 657  | 555  | 780  | 541  | 605  |
| Non-Coastal   | 21   | 24   | 18   | 30   | 8    | 19   | 10   | 29   | 10   | 14   |
| Out-of-State  | 58   | 69   | 46   | 53   | 93   | 155  | 53   | 113  | 62   | 103  |
| Total Anglers | 717  | 740  | 561  | 616  | 695  | 830  | 618  | 922  | 613  | 722  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 385    | 334    | 457    | 374    | 580    | 434    | 569    | 270    | 259    | 304    |
| Private     | 5,302  | 5,374  | 5,528  | 5,652  | 5,961  | 6,457  | 6,400  | 6,915  | 7,372  | 4,652  |
| Shore       | 7,972  | 8,459  | 8,221  | 8,607  | 8,668  | 8,511  | 8,302  | 8,580  | 9,003  | 6,286  |
| Total Trips | 13,659 | 14,167 | 14,206 | 14,633 | 15,209 | 15,402 | 15,271 | 15,765 | 16,634 | 11,242 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2,3</sup>**

|                                  |   | 2009  | 2010   | 2011   | 2012   | 2013   | 2014  | 2015   | 2016   | 2017   | 2018  |
|----------------------------------|---|-------|--------|--------|--------|--------|-------|--------|--------|--------|-------|
| Atlantic herring <sup>4</sup>    | H | 22    | 704    | 732    | 1,391  | 1,520  | 1,190 | 11,460 | 2,105  | 1,052  | 82    |
|                                  | R | 0     | 156    | < 1    | 0      | 409    | 41    | 229    | 161    | 104    | 0     |
| Black seabass                    | H | 1,113 | 1,040  | 570    | 526    | 999    | 1,234 | 2,494  | 3,035  | 2,434  | 853   |
|                                  | R | 3,223 | 2,393  | 1,787  | 9,302  | 4,255  | 3,666 | 7,486  | 13,134 | 16,538 | 5,049 |
| Bluefish                         | H | 2,907 | 2,878  | 3,344  | 3,785  | 2,830  | 4,847 | 2,438  | 2,078  | 3,063  | 1,204 |
|                                  | R | 5,218 | 5,079  | 5,001  | 7,100  | 4,248  | 6,228 | 5,090  | 3,368  | 3,936  | 2,702 |
| Drum (weakfish)                  | H | 0     | 8      | < 1    | 13     | 21     | 2     | 2      | 5      | 17     | 9     |
|                                  | R | 7     | 7      | 119    | 30     | 19     | < 1   | 14     | 9      | 139    | 124   |
| Porgies (scup)                   | H | 2,477 | 3,277  | 2,141  | 1,636  | 2,907  | 2,787 | 7,013  | 3,645  | 6,473  | 5,371 |
|                                  | R | 6,141 | 3,657  | 3,606  | 4,633  | 6,691  | 4,877 | 7,728  | 12,401 | 15,352 | 7,454 |
| Shortfin mako shark <sup>5</sup> | H | NA    | 1      | 0      | < 1    | 0      | 35    | 22     | 4      | 41     | < 1   |
|                                  | R | NA    | 0      | 24     | 24     | 3      | 52    | 21     | 29     | 5      | 65    |
| Striped bass                     | H | 574   | 1,449  | 1,005  | 928    | 902    | 804   | 407    | 698    | 477    | 182   |
|                                  | R | 2,262 | 3,036  | 2,692  | 2,428  | 3,956  | 2,784 | 3,682  | 3,739  | 2,771  | 1,989 |
| Summer flounder                  | H | 498   | 596    | 661    | 1,005  | 1,385  | 1,173 | 1,517  | 1,800  | 1,186  | 641   |
|                                  | R | 9,877 | 13,931 | 16,598 | 10,682 | 13,492 | 9,658 | 14,470 | 9,651  | 12,345 | 6,776 |
| Winter flounder                  | H | 106   | 130    | 113    | 177    | < 1    | 72    | 16     | 37     | < 1    | < 1   |
|                                  | R | 188   | 233    | 168    | 120    | 15     | 28    | 3      | 10     | < 1    | 43    |
| Wrasses (tautog)                 | H | 691   | 541    | 323    | 303    | 473    | 913   | 581    | 1,069  | 405    | 163   |
|                                  | R | 1,457 | 1,628  | 1,738  | 2,935  | 4,570  | 3,017 | 5,577  | 7,367  | 5,462  | 3,040 |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> NA = not available.

<sup>4</sup> Atlantic herring include Atlantic herring and Pacific herring. This species may not be equivalent to species with similar names listed in the commercial tables.

<sup>5</sup> Shortfin mako shark include shortfin mako and shortfin mako shark.

## 2017 New York State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 1,751,378 (6.8%)    | 547,034 (7%)    | 8,261,269 (6.4%) | 547 (8.1%)                   | 816 (7.9%)                          | 1,564                             | 0.12  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                       |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product       | Firms    | 101    | 115    | 142    | 133    | 150    | 181    | 183    | 187    | 195    |
| prep. & packaging     | Receipts | 4,896  | 6,784  | 7,380  | 8,279  | 9,946  | 10,681 | 12,890 | 11,541 | 12,531 |
| Seafood sales, retail | Firms    | 196    | 214    | 183    | 205    | 197    | 188    | 172    | 161    | 179    |
|                       | Receipts | 19,753 | 18,999 | 16,286 | 16,714 | 15,923 | 14,369 | 13,299 | 12,089 | 13,667 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 15     | 15     | 18     | 17     | 17     | 17     | 17     | 18     | 16     |
| prep. & packaging        | Employees      | ds     | 272    | 299    | 265    | 280    | ds     | 310    | 284    | 232    |
|                          | Payroll        | 15,227 | 16,976 | 21,372 | 25,666 | 22,776 | 22,687 | 24,100 | 22,323 | 14,970 |
| Seafood sales, wholesale | Establishments | 246    | 263    | 291    | 243    | 264    | 270    | 275    | 286    | 259    |
|                          | Employees      | 1,741  | 1,798  | 1,876  | 1,839  | 1,937  | 2,051  | 2,056  | 2,149  | 2,038  |
|                          | Payroll        | 68,345 | 72,442 | 76,970 | 78,324 | 84,346 | 87,511 | 93,859 | 97,304 | 95,766 |
| Seafood sales, retail    | Establishments | 386    | 394    | 391    | 385    | 399    | 401    | 409    | 406    | 385    |
|                          | Employees      | 1,509  | 1,586  | 1,660  | 1,674  | 1,796  | 2,054  | 2,163  | 2,226  | 1,889  |
|                          | Payroll        | 31,640 | 32,001 | 35,664 | 38,721 | 45,049 | 51,605 | 53,952 | 60,961 | 49,413 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009    | 2010    | 2011    | 2012    | 2013   | 2014   | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|--------|--------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 47      | 41      | 43      | 49      | 45     | 42     | 42      | 38      | 38      |
|  | Employees      | 585     | 575     | 552     | 560     | ds     | ds     | 487     | 479     | 517     |
|  | Payroll        | 28,880  | 26,771  | 25,998  | 24,599  | 24,338 | 28,028 | 25,591  | 26,257  | 28,329  |
| Deep Sea Freight Transportation                | Establishments | 32      | 30      | 31      | 23      | 20     | 23     | 22      | 21      | 16      |
|  | Employees      | 782     | 704     | 752     | 214     | ds     | ds     | 174     | 212     | 208     |
|  | Payroll        | 89,313  | 98,499  | 88,354  | 31,229  | 22,691 | 19,387 | 26,452  | 19,416  | 28,951  |
| Deep Sea Passenger Transportation              | Establishments | 4       | 2       | 1       | 2       | 3      | 2      | 2       | 1       | NA      |
|  | Employees      | 8       | ds      | ds      | ds      | ds     | ds     | ds      | 0       | NA      |
|  | Payroll        | 126     | ds      | ds      | ds      | ds     | ds     | ds      | 0       | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 48      | 65      | 62      | 42      | 59     | 72     | 73      | 73      | 70      |
|  | Employees      | 2,299   | 1,654   | 1,708   | ds      | ds     | ds     | 1,551   | 1,732   | 1,696   |
|  | Payroll        | 198,352 | 136,577 | 154,087 | ds      | ds     | ds     | 185,742 | 196,617 | 174,203 |
| Port and Harbor Operations                     | Establishments | 4       | 8       | 9       | 18      | 15     | 15     | 14      | 14      | 13      |
|  | Employees      | ds      | ds      | 33      | 1,294   | 196    | 168    | 230     | 205     | 257     |
|  | Payroll        | ds      | 568     | 1,493   | 105,325 | 12,358 | 10,342 | 13,774  | 15,087  | 14,868  |
| Marine Cargo Handling                          | Establishments | 9       | 13      | 12      | 6       | 9      | 12     | 11      | 9       | 7       |
|  | Employees      | ds      | 1,086   | 1,019   | ds      | 922    | 835    | 577     | 429     | 633     |
|  | Payroll        | ds      | 68,555  | 66,439  | ds      | 60,079 | 52,523 | 52,731  | 41,922  | 45,977  |
| Navigational Services to Shipping              | Establishments | 37      | 37      | 35      | 53      | 33     | 36     | 33      | 36      | 47      |
|  | Employees      | 312     | 598     | 596     | 712     | 687    | 722    | 695     | 709     | 933     |
|  | Payroll        | 19,126  | 50,119  | 54,406  | 63,334  | 68,141 | 74,395 | 73,699  | 76,693  | 99,475  |
| Marinas  | Establishments | 418     | 429     | 431     | 415     | 424    | 427    | 429     | 422     | 402     |
|  | Employees      | 2,099   | 2,052   | 2,033   | 1,868   | 1,907  | 1,986  | 1,930   | 1,950   | 1,883   |
|  | Payroll        | 96,640  | 94,654  | 96,408  | 87,124  | 93,212 | 95,900 | 99,181  | 102,523 | 95,528  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Tables | Virginia





**2018 Economic Impacts of the Virginia Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 23,487       | 3,239 | 800    | 1,248       | 12,382          | 808   | 306    | 416         |
| Commercial Harvesters              | 4,014        | 303   | 97     | 144         | 4,014           | 303   | 97     | 144         |
| Seafood Processors & Dealers       | 3,157        | 325   | 127    | 163         | 1,271           | 131   | 51     | 66          |
| Importers                          | 6,118        | 1,980 | 317    | 604         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 1,513        | 215   | 74     | 99          | 433             | 62    | 21     | 28          |
| Retail                             | 8,685        | 416   | 185    | 238         | 6,664           | 312   | 137    | 177         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 151,375 | 161,683 | 193,810 | 173,670 | 162,173 | 172,416 | 197,079 | 203,902 | 186,506 | 177,331 |
| Finfish            | 47,020  | 55,604  | 58,194  | 60,924  | 55,893  | 54,356  | 50,620  | 44,269  | 47,130  | 47,947  |
| Shellfish          | 104,355 | 106,079 | 135,616 | 112,747 | 106,281 | 118,060 | 146,459 | 159,633 | 139,376 | 129,384 |
| Other              | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Atlantic croaker   | 6,940   | 6,025   | 4,571   | 7,534   | 6,247   | 4,186   | 4,059   | 3,071   | 2,705   | 2,893   |
| Black sea bass     | 569     | 928     | 1,003   | 1,401   | 1,716   | 1,365   | 1,607   | 2,071   | 2,074   | 1,829   |
| Blue crab          | 21,169  | 29,133  | 26,274  | 24,561  | 23,991  | 27,047  | 30,607  | 38,267  | 25,245  | 22,394  |
| Goosefish          | 631     | 594     | 752     | 1,217   | 920     | 654     | 516     | 401     | 170     | 150     |
| Menhaden           | 23,578  | 34,476  | 32,995  | 31,107  | 25,343  | 26,046  | 28,202  | 24,236  | 22,865  | 27,716  |
| Oysters            | 3,745   | 5,202   | 6,832   | 11,949  | 25,318  | 29,099  | 36,498  | 33,788  | 49,284  | 43,452  |
| Sea scallop        | 63,312  | 70,204  | 79,427  | 54,076  | 32,610  | 33,643  | 48,806  | 51,832  | 35,036  | 35,067  |
| Spot               | 3,411   | 975     | 3,431   | 770     | 2,406   | 5,763   | 2,263   | 449     | 3,439   | 1,034   |
| Striped bass       | 4,219   | 3,635   | 4,497   | 5,542   | 5,701   | 6,390   | 4,363   | 4,664   | 5,912   | 5,994   |
| Summer flounder    | 2,959   | 4,202   | 5,956   | 7,725   | 8,513   | 4,733   | 5,694   | 5,268   | 4,794   | 4,570   |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 425,191 | 506,625 | 496,447 | 461,212 | 380,177 | 388,236 | 407,687 | 361,132 | 336,265 | 360,743 |
| Finfish            | 378,288 | 456,749 | 441,954 | 416,503 | 345,421 | 353,170 | 373,207 | 320,807 | 302,234 | 327,240 |
| Shellfish          | 46,903  | 49,875  | 54,493  | 44,709  | 34,756  | 35,066  | 34,480  | 40,325  | 34,031  | 33,503  |
| Other              | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Atlantic croaker   | 8,575   | 7,873   | 5,569   | 6,940   | 6,325   | 4,814   | 4,506   | 3,934   | 2,892   | 2,440   |
| Black sea bass     | 165     | 264     | 275     | 392     | 496     | 388     | 422     | 553     | 745     | 606     |
| Blue crab          | 32,756  | 38,490  | 39,656  | 33,143  | 24,258  | 24,205  | 21,378  | 26,298  | 22,011  | 21,384  |
| Goosefish          | 743     | 596     | 604     | 907     | 846     | 587     | 445     | 366     | 216     | 203     |
| Menhaden           | 351,392 | 433,241 | 414,159 | 390,318 | 317,950 | 326,817 | 352,855 | 302,899 | 284,226 | 311,544 |
| Oysters            | 802     | 1,177   | 1,515   | 1,951   | 3,243   | 3,765   | 4,587   | 4,076   | 4,087   | 3,802   |
| Sea scallop        | 10,137  | 9,167   | 8,260   | 5,798   | 2,958   | 2,752   | 4,020   | 4,579   | 3,925   | 3,869   |
| Spot               | 3,910   | 1,024   | 3,741   | 613     | 2,085   | 3,983   | 1,457   | 275     | 1,635   | 601     |
| Striped bass       | 2,109   | 2,139   | 2,077   | 2,175   | 1,680   | 1,995   | 1,331   | 1,241   | 1,082   | 1,277   |
| Summer flounder    | 1,980   | 2,592   | 4,065   | 4,122   | 4,794   | 2,049   | 2,274   | 1,663   | 1,254   | 1,254   |

**Average Annual Price of Key Species/Species Groups (dollars per pound)**

|                  | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| Atlantic croaker | 0.81 | 0.77 | 0.82 | 1.09 | 0.99  | 0.87  | 0.90  | 0.78  | 0.94  | 1.19  |
| Black sea bass   | 3.46 | 3.52 | 3.65 | 3.57 | 3.46  | 3.52  | 3.80  | 3.74  | 2.78  | 3.02  |
| Blue crab        | 0.65 | 0.76 | 0.66 | 0.74 | 0.99  | 1.12  | 1.43  | 1.46  | 1.15  | 1.05  |
| Goosefish        | 0.85 | 1.00 | 1.25 | 1.34 | 1.09  | 1.11  | 1.16  | 1.10  | 0.79  | 0.74  |
| Menhaden         | 0.07 | 0.08 | 0.08 | 0.08 | 0.08  | 0.08  | 0.08  | 0.08  | 0.08  | 0.09  |
| Oysters          | 4.67 | 4.42 | 4.51 | 6.12 | 7.81  | 7.73  | 7.96  | 8.29  | 12.06 | 11.43 |
| Sea scallop      | 6.25 | 7.66 | 9.62 | 9.33 | 11.02 | 12.23 | 12.14 | 11.32 | 8.93  | 9.06  |
| Spot             | 0.87 | 0.95 | 0.92 | 1.26 | 1.15  | 1.45  | 1.55  | 1.63  | 2.10  | 1.72  |
| Striped bass     | 2.00 | 1.70 | 2.16 | 2.55 | 3.39  | 3.20  | 3.28  | 3.76  | 5.46  | 4.69  |
| Summer flounder  | 1.49 | 1.62 | 1.47 | 1.87 | 1.78  | 2.31  | 2.50  | 3.17  | 3.82  | 3.64  |

**2018 Economic Impacts of Virginia Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 116   | 10,904  | 3,632   | 6,456       |
|                              | Private Boat | 951   | 106,179 | 37,371  | 68,526      |
|                              | Shore        | 1,639 | 176,880 | 66,814  | 116,277     |
| Total Durable Expenditures   |              | 3,798 | 417,574 | 167,625 | 273,788     |
| Total State Economic Impacts |              | 6,504 | 711,537 | 275,441 | 465,047     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 6,641             | Fishing Tackle             | 116,942                    |
| Private Boat                                    | 111,811           | Other Equipment            | 41,295                     |
| Shore   | 129,740           | Boat Expenses              | 185,499                    |
| Total   | 248,191           | Vehicle Expenses           | 22,535                     |
|   |                   | Second Home Expenses       | 6,231                      |
|   |                   | Total Durable Expenditures | 372,501                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 620,692                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 515  | 496  | 516  | 412  | 419  | 341  | 359  | 394  | 329  | 324  |
| Non-Coastal   | 87   | 63   | 56   | 78   | 74   | 53   | 59   | 86   | 80   | 45   |
| Out-of-State  | 305  | 279  | 320  | 193  | 267  | 206  | 203  | 244  | 263  | 218  |
| Total Anglers | 907  | 838  | 892  | 684  | 760  | 600  | 620  | 724  | 672  | 587  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 54    | 52    | 31    | 45    | 59    | 53    | 66    | 39    | 43    | 25    |
| Private     | 4,700 | 4,811 | 4,256 | 3,646 | 3,399 | 3,079 | 2,451 | 2,660 | 2,548 | 2,215 |
| Shore       | 3,657 | 3,882 | 4,590 | 4,596 | 4,549 | 4,277 | 4,210 | 4,549 | 4,157 | 4,147 |
| Total Trips | 8,411 | 8,745 | 8,876 | 8,287 | 8,007 | 7,410 | 6,727 | 7,247 | 6,749 | 6,386 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1</sup>**

|                         |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015  | 2016  | 2017   | 2018  |
|-------------------------|---|--------|--------|--------|--------|--------|--------|-------|-------|--------|-------|
| Black sea bass          | H | 313    | 63     | 36     | 13     | 46     | 78     | 66    | 81    | 97     | 87    |
|                         | R | 3,401  | 1,487  | 1,170  | 1,961  | 1,506  | 1,962  | 647   | 1,869 | 2,272  | 1,472 |
| Cobia                   | H | 34     | 17     | 13     | 1      | 24     | 22     | 39    | 44    | 15     | 81    |
|                         | R | 33     | 21     | 27     | 17     | 36     | 58     | 41    | 81    | 77     | 195   |
| Drum (Atlantic croaker) | H | 10,790 | 12,962 | 8,891  | 8,786  | 12,517 | 9,534  | 8,024 | 7,277 | 7,645  | 5,472 |
|                         | R | 16,733 | 13,471 | 14,160 | 15,140 | 18,480 | 10,314 | 6,815 | 6,993 | 8,464  | 5,359 |
| Drum (spot)             | H | 6,906  | 5,631  | 10,129 | 10,148 | 11,734 | 13,653 | 1,731 | 5,279 | 15,944 | 7,361 |
|                         | R | 4,014  | 4,081  | 7,291  | 6,371  | 7,549  | 4,125  | 1,897 | 2,858 | 3,336  | 3,043 |
| Drum (spotted seatrout) | H | 68     | 77     | 644    | 392    | 154    | 85     | 23    | 164   | 172    | 190   |
|                         | R | 550    | 2,530  | 3,463  | 1,257  | 738    | 1,059  | 834   | 3,709 | 3,155  | 4,455 |
| Drum (weakfish)         | H | 59     | 13     | 19     | 46     | 4      | 32     | 10    | 38    | 14     | 6     |
|                         | R | 168    | 533    | 744    | 274    | 205    | 375    | 232   | 1,467 | 455    | 234   |
| Red drum                | H | 122    | 44     | 0      | 91     | 334    | 252    | 22    | 16    | 347    | 6     |
|                         | R | 606    | 88     | 157    | 8,323  | 577    | 1,109  | 79    | 165   | 1,723  | 85    |
| Striped bass            | H | 711    | 369    | 328    | 258    | 302    | 131    | 208   | 138   | 108    | 57    |
|                         | R | 1,072  | 586    | 389    | 289    | 503    | 738    | 1,709 | 1,638 | 1,338  | 1,247 |
| Summer flounder         | H | 579    | 564    | 659    | 678    | 560    | 439    | 334   | 212   | 188    | 146   |
|                         | R | 7,937  | 5,780  | 4,449  | 2,658  | 1,510  | 2,230  | 1,718 | 567   | 1,610  | 874   |
| Wrasses (tautog)        | H | 196    | 324    | 153    | 66     | 20     | 87     | 24    | 40    | 22     | 8     |
|                         | R | 117    | 364    | 110    | 61     | 54     | 197    | 46    | 144   | 76     | 73    |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

## 2017 Virginia State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 617,046 (2.4%)      | 201,893 (2.6%)  | 3,310,542 (2.6%) | 177 (2.6%)                   | 293 (2.8%)                          | 518                               | 0.61  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 69    | 56    | 73    | 76    | 84    | 83    | 85    | 94    | 66    |
|                                   | Receipts | 4,053 | 3,698 | 3,792 | 4,691 | 4,276 | 5,720 | 5,849 | 7,389 | 5,476 |
| Seafood sales, retail             | Firms    | 82    | 82    | 78    | 87    | 94    | 90    | 80    | 80    | 75    |
|                                   | Receipts | 6,642 | 6,951 | 7,819 | 8,373 | 7,612 | 7,084 | 7,489 | 7,698 | 8,170 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 25     | 23     | 18     | 19     | 18     | 20     | 17     | 18     | 21     |
|                                   | Employees      | 941    | 961    | 899    | 919    | 781    | 804    | 790    | 790    | 839    |
|                                   | Payroll        | 30,600 | 30,460 | 33,285 | 32,955 | 30,682 | 29,763 | 31,614 | 32,991 | 46,474 |
| Seafood sales, wholesale          | Establishments | 72     | 76     | 62     | 64     | 70     | 65     | 65     | 60     | 58     |
|                                   | Employees      | 519    | 518    | 469    | 492    | 483    | 448    | 444    | 457    | 379    |
|                                   | Payroll        | 15,620 | 17,901 | 15,733 | 14,271 | 14,719 | 14,769 | 16,089 | 16,115 | 16,872 |
| Seafood sales, retail             | Establishments | 62     | 59     | 58     | 51     | 55     | 57     | 59     | 56     | 56     |
|                                   | Employees      | 271    | 265    | 277    | 280    | 254    | 224    | 279    | 247    | 215    |
|                                   | Payroll        | 5,401  | 5,480  | 5,453  | 5,563  | 5,526  | 5,537  | 6,641  | 7,255  | 6,222  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015      | 2016      | 2017      |
|--|----------------|--------|--------|--------|--------|--------|--------|-----------|-----------|-----------|
| Ship and Boat Building                         | Establishments | 53     | 56     | 51     | 59     | 54     | 56     | 54        | 60        | 53        |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 30,622    | 30,387    | 27,924    |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | 1,955,354 | 1,922,736 | 1,817,205 |
| Deep Sea Freight Transportation                | Establishments | 16     | 17     | 21     | 19     | 12     | 12     | 12        | 14        | 13        |
|  | Employees      | ds     | 421    | 492    | ds     | ds     | ds     | 254       | 301       | 270       |
|  | Payroll        | 19,241 | 35,917 | 42,018 | ds     | ds     | ds     | 33,057    | 38,674    | 34,928    |
| Deep Sea Passenger Transportation              | Establishments | 2      | 1      | 2      | 1      | 1      | 1      | 1         | 1         | NA        |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds        | 0         | NA        |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | ds        | 0         | NA        |
| Coastal and Great Lakes Freight Transportation | Establishments | 9      | 7      | 7      | 12     | 11     | 12     | 10        | 12        | 12        |
|  | Employees      | ds     | ds     | ds     | ds     | 177    | 152    | 186       | 325       | 387       |
|  | Payroll        | ds     | ds     | ds     | ds     | 10,077 | 9,264  | 11,951    | 18,059    | 24,801    |
| Port and Harbor Operations                     | Establishments | 6      | 7      | 6      | 13     | 14     | 15     | 14        | 13        | 14        |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | 1,922     | 2,167     | 2,052     |
|  | Payroll        | ds     | ds     | ds     | ds     | ds     | ds     | 132,983   | 125,111   | 144,903   |
| Marine Cargo Handling                          | Establishments | 12     | 7      | 11     | 6      | 8      | 8      | 8         | 8         | 6         |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds        | 805       | 751       |
|  | Payroll        | ds     | 41,280 | 41,262 | ds     | ds     | ds     | ds        | 50,903    | 54,946    |
| Navigational Services to Shipping              | Establishments | 25     | 26     | 21     | 20     | 18     | 20     | 20        | 18        | 26        |
|  | Employees      | 384    | 411    | 419    | 428    | 303    | 322    | 302       | 294       | 314       |
|  | Payroll        | 22,177 | 22,910 | 22,132 | 25,732 | 20,283 | 21,348 | 20,746    | 19,600    | 21,965    |
| Marinas  | Establishments | 118    | 115    | 110    | 105    | 113    | 107    | 108       | 103       | 96        |
|  | Employees      | 829    | 868    | 818    | 673    | 840    | 814    | 818       | 821       | 636       |
|  | Payroll        | 24,631 | 24,182 | 23,379 | 18,874 | 24,468 | 24,436 | 25,146    | 25,777    | 19,270    |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.



# South Atlantic Region

- East Florida
- Georgia
- North Carolina
- South Carolina



A row of recreational fishing boats in Hatteras, North Carolina.  
Photo: NOAA Fisheries/Cameron Rhodes

## MANAGEMENT CONTEXT

The South Atlantic Region includes East Florida, Georgia, North Carolina, and South Carolina. Federal fisheries in this region are managed by the South Atlantic Fishery Management Council and NOAA Fisheries under eight fishery management plans. The coastal migratory pelagic resources and spiny lobster FMPs are managed jointly with the Gulf of Mexico Fishery Management Council.

### South Atlantic Region FMPs

- Coastal migratory pelagic resources (with GMFMC)
- Coral, coral reef and live/hardbottom habitat
- Dolphin/wahoo
- Golden crab
- Pelagic sargassum habitat
- Shrimp
- Snapper grouper
- Spiny lobster (with GMFMC)

Five of the stocks/complexes covered in these FMPs were listed as overfished in 2018: hogfish (Southeast Florida stock), red snapper (South Atlantic stock), red porgy, snowy grouper, and red grouper (South Atlantic stock).

Six stocks/complexes were subject to overfishing in 2018: hogfish (Southeast Florida stock), red snapper (South Atlantic stock), speckled hind, warsaw grouper, tilefish (South Atlantic stock), and blueline tilefish (South Atlantic stock). Red grouper (Southern Atlantic Coast stock) was removed from the overfishing list in 2018.

## Catch Share Programs

One catch share program has been implemented in the South Atlantic: the South Atlantic Wreckfish ITQ Program. This catch share program is described below.

**South Atlantic Wreckfish ITQ Program:** This program was implemented in 1992 and is the only catch share program in the South Atlantic Region. The program was developed to create incentives for the conservation of wreckfish; provide a management regime that promotes stability and facilitates long-range planning and investment by harvesters and dealers; promote management regimes that minimize gear and area conflicts among fishermen; minimize the tendency for overcapitalization in the harvesting and processing/dis-

tribution sectors; and provide a reasonable opportunity for fishermen to make adequate returns from commercial fishing by limiting entry into the program. NOAA Fisheries continues to collect data on this program to develop standard performance indicators that measure its basic economic performance.

## COMMERCIAL FISHERIES — SOUTH ATLANTIC REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

### Key South Atlantic Commercial Species

- Blue crab
- Clams
- Flounders
- Groupers
- King mackerels
- Oysters
- Shrimp
- Snappers
- Swordfish
- Tunas

## Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households resulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2,3</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry in Georgia generated the largest employment impacts in the South Atlantic region with 18,267 full- and part-time jobs. Georgia also generated the largest sales impacts (\$3 billion), value-added impacts (\$1.1 billion), and income impacts (\$669 million).

## Landings Revenue

In 2018, landings revenue in the South Atlantic Region totaled \$175.2 million, an 18% increase from 2009 (a 2% increase in real terms after adjusting for inflation) and a 13% decrease from 2017. Landings revenue was highest in North Carolina (\$78.8 million), followed by East Florida (\$57.7 million).

Shellfish landings revenue accounted for 64% of all landings revenue. In 2018, shrimp (\$58.9 million), blue crab (\$35.1 million), and flounders (\$11 million) had the highest landings revenue in this region. Together,

these top three species accounted for 60% of total landings revenue.

From 2009 to 2018, shrimp (79%, 54% in real terms), oysters (56%, 35% in real terms), and tunas (30%, 12% in real terms) had the largest increases, while groupers (-33%, -42% in real terms), king mackerels (-13%, -25% in real terms), and other (-12%, -25% in real terms) had the largest decreases. From 2017 to 2018, other (32%), groupers (8%), and swordfish (7%) had the largest increases, while shrimp (-23%), oysters (-16%), and tunas (-13%) had the largest decreases.

### Commercial Revenue: Largest Increases

*From 2009:*

- Shrimp (79%, 54% in real terms)
- Oysters (56%, 35% in real terms)
- Tunas (30%, 12% in real terms)

*From 2017:*

- Groupers (8%)
- Swordfish (7%)
- Snappers (5%)

### Commercial Revenue: Largest Decreases

*From 2009:*

- Groupers (-33%, -42% in real terms)
- King mackerels (-13%, -25% in real terms)
- Blue crab (-7%, -13% in real terms)

*From 2017:*

- Shrimp (-23%)
- Oysters (-16%)
- Tunas (-13%)

## Landings

In 2018, South Atlantic Region commercial fishermen landed over 104.9 million pounds of finfish and shellfish. This represents an 8% decrease from 2009 and a 9% decrease from 2017. Shrimp contributed the highest landings volume in the region, accounting for 31% of total landing weight.

From 2009 to 2018, only shrimp (62%) and tuna (3%) landings increased, while groupers (-56%) and flounders

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

<sup>3</sup> Commercial economic impacts data were not available for East Florida specifically; data for the entire state of Florida are reported here.



(-51%) had the largest decreases. From 2017 to 2018, swordfish (16%), groupers (5%), and snappers (1%) had the largest increases, while tunas (-24%), oysters (-20%), and shrimp (-17%) had the largest decreases.

#### Commercial Landings: Largest Increases

From 2009:

- Shrimp (62%)
- Tunas (3%)

From 2017:

- Swordfish (16%)
- Groupers (5%)
- Snappers (1%)

#### Commercial Landings: Largest Decreases

From 2009:

- Groupers (-56%)
- Flounders (-51%)
- Oysters (-39%)

From 2017:

- Tunas (-24%)
- Oysters (-20%)
- Shrimp (-17%)

## Prices

In 2018, oysters (\$12.51 per pound) received the highest ex-vessel price in the region. Landings of blue crab (\$1.28 per pound) had the lowest ex-vessel price. From 2009 to 2018, oysters (155%, 120% in real terms), flounders (115%, 86% in real terms), and king mackerels (55%, 33% in real terms) had the largest increases; no species experienced a price decline for this period. From 2017 to 2018, tunas (14%), king mackerels (8%), and clams (5%) had the largest increases, while shrimp (-8%) and swordfish (-7%) had the largest decreases.

## RECREATIONAL FISHERIES — SOUTH ATLANTIC REGION

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on

economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>4</sup>

#### Key South Atlantic Recreational Species<sup>5,6</sup>

- |                                    |                         |
|------------------------------------|-------------------------|
| • Black sea bass                   | • King mackerel         |
| • Bluefish                         | • Porgies (sheeps-head) |
| • Dolphinfinh                      | • Red drum              |
| • Drum (Atlantic croaker and spot) | • Sharks                |
| • Drum (spotted seatrout)          | • Spanish mackerel      |

## Economic Impacts and Expenditures

The economic contribution of recreational fishing activities in the South Atlantic Region is based on spending by recreational anglers.<sup>7</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>8</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three

<sup>4</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018.

<sup>5</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>6</sup> Sharks: Atlantic sharpnose shark, blacktip shark, requiem shark, requiem shark family, requiem shark genus, shark species, unidentified (sharks), and unidentified sharks.

<sup>7</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>8</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

The greatest employment impacts from expenditures on saltwater recreational fishing in the South Atlantic Region were generated in East Florida (55,407 jobs), followed by North Carolina (24,795 jobs) and South Carolina (11,010 jobs). The largest sales impacts were observed in East Florida (\$6.5 billion), followed by North Carolina (\$2.6 billion) and South Carolina (\$1 billion). The biggest income impacts were generated in East Florida (\$2.3 billion), followed by North Carolina (\$947.4 million) and South Carolina (\$358.8 million). The greatest value-added impacts were in East Florida (\$4 billion), followed by North Carolina (\$1.6 billion) and South Carolina (\$642.7 million).

Expenditures for fishing trips and durable equipment across the South Atlantic Region in 2018 totaled \$8.6 billion. This total included \$5.4 billion in durable goods expenditures, with the largest portion coming from boat expenses (\$3.1 billion).

## Participation

In 2018, there were 2.4 million recreational anglers who fished in the South Atlantic Region. This number represented a 1% increase from 2009 and a 12% increase from 2017. The anglers are categorized as either residents from coastal (81%) or non-coastal (19%) counties.

## Fishing Trips

In 2018, recreational fishermen took 75.1 million fishing trips in the South Atlantic Region. This number represented a 4% decrease from 2009 and a 2% decrease

from 2017. The largest proportions of trips were taken in the shore mode (69%) and private boat (30%). States with the highest number of recorded trips in the South Atlantic Region were East Florida (44 million trips) and North Carolina (16.6 million trips).

## Harvest and Release Trends

Of the South Atlantic Region's key species and species groups, drum (spotted seatrout) (26.5 million fish), drum (Atlantic croaker and spot) (21.7 million fish), and bluefish (19.1 million fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, red drum (82%), porgies (sheepshead) (55%), and dolphinfish (40%) had the largest increases, while sharks (-42%), king mackerel (-4%), and black sea bass (-0.4%) had the largest decreases. From 2017 to 2018, Spanish mackerel (64%), porgies (sheepshead) (39%), and sharks (8%) had the largest increases, while black sea bass (-48%) and red drum (-4%) had the largest decreases.

### Harvest and Release: Largest Increases

*From 2009:*

- Red drum (82%)
- Porgies (sheepshead) (55%)
- Dolphinfish (40%)

*From 2017:*

- Spanish mackerel (64%)
- Porgies (sheepshead) (39%)
- Sharks (8%)

### Harvest and Release: Largest Decreases

*From 2009:*

- Sharks (-42%)
- King mackerel (-4%)
- Black sea bass (-0.4%)

*From 2017:*

- Black sea bass (-48%)
- Red drum (-4%)

## MARINE ECONOMY — SOUTH ATLANTIC REGION

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>9</sup>

Note that when discussing the marine economy in the South Atlantic Region, all statistics include the entire state of Florida and not just East Florida.<sup>10</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>11</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

Florida had the highest CFLQ at 0.97 in 2017. South Carolina had a CFLQ value of 0.11.

In 2017, 1.1 million employer establishments operated throughout the entire South Atlantic Region (including marine and non-marine related establishments). These establishments employed 17.9 million workers and had a total annual payroll of \$822.6 billion. The combined gross state product of Florida, Georgia, North Carolina, and South Carolina was approximately \$2.3 trillion in 2017.<sup>12</sup>

### Seafood Sales and Processing

**Seafood Product Preparation and Packaging:** In 2017, the South Atlantic Region had 465 non-employer firms in the seafood product preparation and packaging sector (a 44% increase from 2009). Annual receipts for these firms totaled \$36.5 million. There were 41 employer

firms in this sector (a 16% decrease from 2009). These establishments employed 2,868 workers and had a total annual payroll of \$121 million.<sup>13</sup> The greatest number of employer and non-employer establishments in this sector was in Florida (303), followed by Georgia (101) and North Carolina (72).

**Seafood Sales, Retail:** In 2017, there were 609 non-employer firms in seafood retail sales in the states that make up the South Atlantic Region (a 3% decrease from 2009). Annual receipts for these firms totaled \$57.2 million. There were 387 employer firms in the seafood retail sector (a 16% increase from 2009). These establishments employed 1,888 workers (a 22% increase from 2009) and had a total annual payroll of \$45.4 million. The greatest number of employer and non-employer establishments in this sector was in Florida (492), followed by North Carolina (242) and Georgia (142).

**Seafood Sales, Wholesale:** There were 319 employer firms in the seafood wholesale sector in the South Atlantic Region in 2017 (a 3% decrease from 2009). These establishments employed 3,192 workers (a 7% increase from 2009) and had a total annual payroll of \$128.2 million. The greatest number of employer and non-employer establishments in this sector was in Florida (230), followed by North Carolina (51) and Georgia (24).

### Transportation Support and Marine Operations

Data for the transportation support and marine operations sectors of the South Atlantic Region's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the ship and boat building sector in the South Atlantic Region accounted for \$1.4 billion in payroll. The deep sea passenger transportation sector in Florida alone accounted for \$970.6 million in payroll in 2017.

<sup>9</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>10</sup> Marine economy information was not available for East Florida; information for the entire state of Florida is provided in this report.

<sup>11</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>12</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

<sup>13</sup> The Census Bureau suppressed number of employees and payroll data for this sector in one or more states in this region in either 2017 or 2009, and thus cannot be compared.

# Tables | South Atlantic Region



## South Atlantic Region | Commercial Fisheries

## 2018 Economic Impacts of the South Atlantic Seafood Industry (millions of dollars)

|                      | Landings Revenue | With Imports |        |        |             | Without Imports |       |        |             |
|----------------------|------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                      |                  | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Florida <sup>1</sup> | 248              | 82,094       | 19,200 | 3,591  | 6,422       | 9,847           | 1,006 | 265    | 406         |
| Georgia              | 17               | 18,267       | 3,049  | 669    | 1,105       | 1,912           | 104   | 41     | 55          |
| North Carolina       | 79               | 8,048        | 862    | 232    | 352         | 4,747           | 272   | 111    | 148         |
| South Carolina       | 21               | 1,644        | 175    | 50     | 74          | 1,145           | 72    | 29     | 39          |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 148,001 | 166,821 | 172,494 | 173,130 | 164,103 | 191,704 | 198,654 | 192,176 | 202,422 | 175,178 |
| Finfish            | 63,453  | 66,365  | 66,764  | 65,027  | 62,900  | 71,607  | 65,073  | 64,992  | 68,541  | 62,378  |
| Shellfish          | 84,480  | 100,409 | 105,390 | 108,062 | 100,181 | 119,047 | 133,007 | 127,056 | 133,836 | 112,740 |
| Other              | 68      | 47      | 340     | 41      | 1,022   | 1,049   | 575     | 128     | 45      | 59      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Blue crab          | 37,826  | 36,435  | 34,422  | 38,018  | 44,563  | 47,048  | 46,437  | 37,645  | 37,481  | 35,093  |
| Clams              | 3,975   | 4,458   | 3,804   | 3,801   | 3,054   | 3,559   | 8,013   | 5,857   | 4,847   | 4,432   |
| Flounders          | 10,387  | 11,179  | 9,530   | 8,014   | 7,538   | 13,495  | 13,133  | 12,428  | 12,255  | 10,969  |
| Groupers           | 4,349   | 3,873   | 3,802   | 3,445   | 3,385   | 3,474   | 3,190   | 2,564   | 2,728   | 2,936   |
| King mackerels     | 8,082   | 7,571   | 6,614   | 5,569   | 5,242   | 5,831   | 5,623   | 6,291   | 7,408   | 7,037   |
| Oysters            | 4,602   | 7,131   | 6,852   | 5,492   | 6,080   | 7,209   | 16,536  | 7,234   | 8,610   | 7,197   |
| Shrimp             | 32,894  | 45,938  | 53,765  | 55,002  | 39,023  | 50,967  | 51,568  | 67,249  | 76,514  | 58,875  |
| Snappers           | 4,024   | 3,490   | 3,897   | 4,214   | 3,890   | 4,037   | 3,564   | 3,426   | 3,737   | 3,937   |
| Swordfish          | 4,805   | 7,851   | 10,031  | 9,536   | 8,438   | 6,858   | 5,910   | 5,765   | 5,184   | 5,565   |
| Tunas              | 4,847   | 4,075   | 5,162   | 7,053   | 6,107   | 7,053   | 5,673   | 5,003   | 7,260   | 6,300   |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 114,138 | 120,329 | 123,658 | 107,503 | 101,057 | 113,411 | 114,269 | 106,750 | 115,805 | 104,952 |
| Finfish            | 51,288  | 52,490  | 49,072  | 39,984  | 37,419  | 45,005  | 38,307  | 34,887  | 34,481  | 31,815  |
| Shellfish          | 62,768  | 67,791  | 69,803  | 67,489  | 51,174  | 55,502  | 69,370  | 70,512  | 81,305  | 73,119  |
| Other              | 83      | 48      | 4,783   | 31      | 12,464  | 12,905  | 6,593   | 1,351   | 19      | 18      |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Blue crab          | 39,007  | 39,014  | 42,564  | 40,721  | 33,042  | 34,392  | 40,587  | 35,249  | 30,003  | 27,437  |
| Clams              | 666     | 681     | 630     | 661     | 472     | 529     | 887     | 775     | 702     | 609     |
| Flounders          | 5,362   | 5,108   | 4,355   | 2,963   | 2,890   | 4,734   | 4,179   | 3,145   | 3,052   | 2,629   |
| Groupers           | 1,294   | 1,105   | 953     | 859     | 787     | 762     | 675     | 537     | 546     | 571     |
| King mackerels     | 4,855   | 4,245   | 3,048   | 2,457   | 1,913   | 2,381   | 2,267   | 2,634   | 3,113   | 2,729   |
| Oysters            | 938     | 1,428   | 1,233   | 903     | 1,038   | 1,152   | 1,053   | 1,073   | 720     | 575     |
| Shrimp             | 19,846  | 23,174  | 22,960  | 22,760  | 14,132  | 15,894  | 23,289  | 29,992  | 38,531  | 32,115  |
| Snappers           | 1,373   | 1,196   | 1,295   | 1,349   | 1,221   | 1,191   | 1,042   | 973     | 1,033   | 1,045   |
| Swordfish          | 1,793   | 2,379   | 2,721   | 2,734   | 2,466   | 1,629   | 1,731   | 1,695   | 1,456   | 1,688   |
| Tunas              | 1,931   | 1,842   | 2,234   | 2,496   | 2,390   | 2,721   | 2,069   | 2,140   | 2,617   | 1,991   |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016 | 2017  | 2018  |
|----------------|------|------|------|------|------|------|-------|------|-------|-------|
| Blue crab      | 0.97 | 0.93 | 0.81 | 0.93 | 1.35 | 1.37 | 1.14  | 1.07 | 1.25  | 1.28  |
| Clams          | 5.97 | 6.55 | 6.04 | 5.75 | 6.47 | 6.73 | 9.03  | 7.56 | 6.91  | 7.28  |
| Flounders      | 1.94 | 2.19 | 2.19 | 2.70 | 2.61 | 2.85 | 3.14  | 3.95 | 4.02  | 4.17  |
| Groupers       | 3.36 | 3.51 | 3.99 | 4.01 | 4.30 | 4.56 | 4.73  | 4.78 | 5.00  | 5.15  |
| King mackerels | 1.66 | 1.78 | 2.17 | 2.27 | 2.74 | 2.45 | 2.48  | 2.39 | 2.38  | 2.58  |
| Oysters        | 4.91 | 4.99 | 5.56 | 6.08 | 5.86 | 6.26 | 15.71 | 6.74 | 11.96 | 12.51 |
| Shrimp         | 1.66 | 1.98 | 2.34 | 2.42 | 2.76 | 3.21 | 2.21  | 2.24 | 1.99  | 1.83  |
| Snappers       | 2.93 | 2.92 | 3.01 | 3.12 | 3.19 | 3.39 | 3.42  | 3.52 | 3.62  | 3.77  |
| Swordfish      | 2.68 | 3.30 | 3.69 | 3.49 | 3.42 | 4.21 | 3.41  | 3.40 | 3.56  | 3.30  |
| Tunas          | 2.51 | 2.21 | 2.31 | 2.83 | 2.55 | 2.59 | 2.74  | 2.34 | 2.77  | 3.16  |

<sup>1</sup> Landings revenue is for East Florida. The rest of the information in this row is for the entire state of Florida.

**2018 Economic Impacts of the South Atlantic Recreational Fishing Expenditures (thousands of dollars, trips)**

|                | <b>Trips</b> | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|----------------|--------------|--------------|--------------|---------------|--------------------|
| East Florida   | 43,987       | 55,407       | 6,475,640    | 2,324,056     | 3,966,505          |
| Georgia        | 4,593        | 3,811        | 343,662      | 121,963       | 220,496            |
| North Carolina | 16,624       | 24,795       | 2,615,215    | 947,410       | 1,583,200          |
| South Carolina | 9,897        | 11,010       | 1,041,944    | 358,784       | 642,710            |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 151,882                  | Fishing Tackle             | 1,266,453                         |
| Private Boat                                    | 950,160                  | Other Equipment            | 539,791                           |
| Shore   | 2,150,935                | Boat Expenses              | 3,137,895                         |
| Total   | 3,252,977                | Vehicle Expenses           | 376,844                           |
|   |                          | Second Home Expenses       | 47,554                            |
|   |                          | Total Durable Expenditures | 5,368,536                         |
| Total State Trip and Durable Goods Expenditures |                          |                            | 8,621,513                         |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal       | 1,922       | 1,933       | 1,893       | 2,135       | 2,092       | 2,189       | 1,753       | 1,873       | 1,750       | 1,954       |
| Non-Coastal   | 462         | 536         | 450         | 502         | 396         | 530         | 475         | 472         | 401         | 465         |
| Total Anglers | 2,384       | 2,470       | 2,343       | 2,637       | 2,488       | 2,719       | 2,229       | 2,345       | 2,151       | 2,419       |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 405         | 350         | 360         | 362         | 392         | 448         | 508         | 540         | 560         | 523         |
| Private     | 23,532      | 25,415      | 23,391      | 20,786      | 20,495      | 22,194      | 21,753      | 21,252      | 21,506      | 22,890      |
| Shore       | 54,669      | 54,096      | 52,923      | 48,186      | 47,627      | 52,768      | 53,562      | 51,317      | 54,849      | 51,687      |
| Total Trips | 78,605      | 79,861      | 76,674      | 69,334      | 68,513      | 75,410      | 75,824      | 73,109      | 76,914      | 75,101      |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2</sup>**

|                                  |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|----------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Black sea bass                   | H | 673         | 1,330       | 933         | 687         | 629         | 1,113       | 727         | 553         | 620         | 351         |
|                                  | R | 5,670       | 7,037       | 10,197      | 11,658      | 7,259       | 15,547      | 11,307      | 10,161      | 11,526      | 5,967       |
| Bluefish                         | H | 9,159       | 10,881      | 10,637      | 5,949       | 8,448       | 8,571       | 7,176       | 7,116       | 5,525       | 6,213       |
|                                  | R | 12,400      | 22,284      | 18,670      | 12,110      | 19,009      | 13,887      | 14,742      | 13,232      | 13,106      | 12,898      |
| Dolphinfish                      | H | 1,438       | 1,212       | 1,421       | 1,436       | 1,142       | 1,618       | 2,255       | 1,345       | 1,666       | 1,807       |
|                                  | R | 209         | 244         | 885         | 246         | 448         | 701         | 889         | 131         | 629         | 504         |
| Drum (Atlantic croaker and spot) | H | 11,474      | 9,229       | 15,301      | 11,548      | 14,762      | 17,704      | 18,413      | 12,502      | 7,209       | 6,247       |
|                                  | R | 16,394      | 11,600      | 19,797      | 15,980      | 25,015      | 29,222      | 24,075      | 24,625      | 14,655      | 15,454      |
| Drum (spotted seatrout)          | H | 4,230       | 3,360       | 2,611       | 5,115       | 3,608       | 2,821       | 1,805       | 3,543       | 3,904       | 2,804       |
|                                  | R | 12,768      | 20,219      | 17,352      | 18,486      | 13,513      | 14,324      | 13,867      | 15,163      | 15,380      | 23,720      |
| King mackerel                    | H | 833         | 474         | 302         | 254         | 236         | 298         | 323         | 526         | 637         | 681         |
|                                  | R | 168         | 160         | 104         | 97          | 78          | 199         | 144         | 123         | 323         | 285         |
| Porgies (sheepshead)             | H | 1,953       | 2,647       | 2,357       | 1,630       | 2,056       | 2,658       | 1,572       | 2,415       | 1,885       | 2,604       |
|                                  | R | 1,991       | 2,281       | 2,089       | 2,805       | 2,288       | 3,474       | 3,177       | 2,944       | 2,536       | 3,525       |
| Red drum                         | H | 990         | 1,781       | 1,518       | 1,422       | 2,048       | 1,958       | 1,585       | 2,010       | 2,256       | 2,239       |
|                                  | R | 5,536       | 11,626      | 6,767       | 8,857       | 9,458       | 8,787       | 7,835       | 9,806       | 10,164      | 9,644       |
| Sharks                           | H | 98          | 64          | 59          | 65          | 151         | 137         | 45          | 162         | 34          | 25          |
|                                  | R | 8,375       | 7,485       | 6,357       | 6,689       | 12,893      | 8,491       | 10,102      | 6,926       | 4,522       | 4,879       |
| Spanish mackerel                 | H | 3,184       | 3,638       | 2,644       | 2,034       | 3,764       | 2,577       | 1,461       | 2,866       | 1,741       | 2,309       |
|                                  | R | 1,538       | 2,193       | 1,411       | 1,164       | 2,708       | 1,878       | 1,060       | 2,017       | 1,460       | 2,944       |

<sup>1</sup> East Florida anglers estimates are not available for the non-coastal mode.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.





# Tables | East Florida



## East Florida | Commercial Fisheries

2018 Economic Impacts of the Florida Seafood Industry (millions of dollars)<sup>1</sup>

|                                    | With Imports |        |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 82,094       | 19,200 | 3,591  | 6,422       | 9,847           | 1,006 | 265    | 406         |
| Commercial Harvesters              | 6,431        | 493    | 154    | 205         | 6,431           | 493   | 154    | 205         |
| Seafood Processors & Dealers       | 4,774        | 900    | 174    | 343         | 525             | 106   | 21     | 40          |
| Importers                          | 43,137       | 13,960 | 2,237  | 4,256       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 10,450       | 1,400  | 550    | 684         | 434             | 58    | 23     | 28          |
| Retail                             | 17,302       | 2,446  | 476    | 935         | 2,456           | 348   | 68     | 133         |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>2</sup>

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 41,484 | 51,775 | 61,430 | 58,600 | 49,586 | 57,716 | 51,550 | 56,262 | 63,085 | 57,658 |
| Finfish            | 23,254 | 25,688 | 26,355 | 26,167 | 24,101 | 26,769 | 23,388 | 22,914 | 23,101 | 23,535 |
| Shellfish          | 18,164 | 26,040 | 35,037 | 32,393 | 25,400 | 30,888 | 28,049 | 33,304 | 39,944 | 34,065 |
| Other              | 67     | 47     | 38     | 41     | 85     | 59     | 113    | 44     | 40     | 58     |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 2,473  | 3,649  | 4,699  | 5,172  | 4,220  | 3,402  | 3,641  | 3,793  | 4,682  | 4,325  |
| Clams              | 414    | 332    | 287    | 145    | 46     | 61     | 58     | 32     | NA     | 1      |
| Groupers           | 661    | 620    | 631    | 906    | 744    | 799    | 883    | 685    | 674    | 729    |
| King mackerel      | 6,559  | 6,902  | 5,534  | 4,695  | 4,348  | 4,585  | 4,805  | 5,314  | 6,058  | 5,831  |
| Lobsters           | 1,089  | 2,825  | 3,213  | 1,891  | 3,442  | 5,152  | 3,736  | 3,032  | 1,966  | 3,580  |
| Sharks             | 464    | 374    | 355    | 299    | 383    | 508    | 573    | 425    | 529    | 386    |
| Shrimp             | 12,605 | 17,252 | 24,536 | 21,969 | 14,354 | 18,312 | 16,353 | 22,601 | 29,967 | 23,495 |
| Snappers           | 2,383  | 1,454  | 1,808  | 1,979  | 1,898  | 2,224  | 1,700  | 1,381  | 1,624  | 1,609  |
| Spanish mackerel   | 2,004  | 2,414  | 2,687  | 2,463  | 2,678  | 2,652  | 2,171  | 2,534  | 2,760  | 2,918  |
| Swordfish          | 2,368  | 3,664  | 3,785  | 4,420  | 3,132  | 3,819  | 2,607  | 2,637  | 1,917  | 2,805  |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 28,273 | 30,542 | 32,513 | 29,621 | 22,678 | 24,442 | 24,251 | 27,632 | 35,298 | 33,805 |
| Finfish            | 16,080 | 17,042 | 16,122 | 14,382 | 12,589 | 13,642 | 12,201 | 12,110 | 12,057 | 12,359 |
| Shellfish          | 12,112 | 13,453 | 16,353 | 15,209 | 10,050 | 10,769 | 12,020 | 15,492 | 23,224 | 21,429 |
| Other              | 82     | 46     | 38     | 30     | 39     | 32     | 30     | 30     | 16     | 17     |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 1,701  | 2,728  | 3,663  | 3,769  | 2,491  | 1,659  | 1,783  | 1,901  | 2,501  | 2,013  |
| Clams              | 54     | 42     | 38     | 18     | 7      | 8      | 8      | 3      | NA     | 0      |
| Groupers           | 188    | 167    | 158    | 226    | 178    | 179    | 187    | 142    | 137    | 141    |
| King mackerel      | 4,061  | 3,903  | 2,633  | 2,145  | 1,562  | 1,812  | 1,859  | 2,162  | 2,438  | 2,191  |
| Lobsters           | 298    | 481    | 515    | 337    | 486    | 543    | 481    | 394    | 256    | 528    |
| Sharks             | 1,095  | 719    | 698    | 577    | 631    | 463    | 554    | 249    | 442    | 296    |
| Shrimp             | 8,664  | 8,751  | 10,531 | 9,208  | 5,316  | 5,808  | 7,072  | 10,601 | 19,002 | 17,305 |
| Snappers           | 805    | 510    | 612    | 645    | 623    | 670    | 506    | 407    | 447    | 415    |
| Spanish mackerel   | 2,629  | 3,553  | 3,433  | 2,597  | 2,265  | 2,585  | 1,808  | 2,461  | 2,673  | 2,926  |
| Swordfish          | 831    | 1,024  | 1,004  | 1,218  | 783    | 778    | 753    | 722    | 521    | 811    |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018  |
|------------------|------|------|------|------|------|------|------|------|------|-------|
| Blue crab        | 1.45 | 1.34 | 1.28 | 1.37 | 1.69 | 2.05 | 2.04 | 1.99 | 1.87 | 2.15  |
| Clams            | 7.71 | 7.89 | 7.62 | 7.97 | 6.35 | 7.62 | 7.48 | 9.83 | NA   | 11.19 |
| Groupers         | 3.52 | 3.72 | 3.99 | 4.01 | 4.18 | 4.46 | 4.71 | 4.80 | 4.91 | 5.17  |
| King mackerel    | 1.62 | 1.77 | 2.10 | 2.19 | 2.78 | 2.53 | 2.58 | 2.46 | 2.48 | 2.66  |
| Lobsters         | 3.66 | 5.87 | 6.24 | 5.60 | 7.08 | 9.48 | 7.76 | 7.70 | 7.68 | 6.78  |
| Sharks           | 0.42 | 0.52 | 0.51 | 0.52 | 0.61 | 1.10 | 1.03 | 1.71 | 1.20 | 1.30  |
| Shrimp           | 1.45 | 1.97 | 2.33 | 2.39 | 2.70 | 3.15 | 2.31 | 2.13 | 1.58 | 1.36  |
| Snappers         | 2.96 | 2.85 | 2.96 | 3.07 | 3.04 | 3.32 | 3.36 | 3.40 | 3.63 | 3.88  |
| Spanish mackerel | 0.76 | 0.68 | 0.78 | 0.95 | 1.18 | 1.03 | 1.20 | 1.03 | 1.03 | 1.00  |
| Swordfish        | 2.85 | 3.58 | 3.77 | 3.63 | 4.00 | 4.91 | 3.46 | 3.65 | 3.68 | 3.46  |

<sup>1</sup> Information reported in this table is for the entire state of Florida.<sup>2</sup> NA = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of East Florida Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income    | Value Added |
|------------------------------|--------------|--------|-----------|-----------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 802    | 83,241    | 29,330    | 49,601      |
|                              | Private Boat | 5,851  | 592,821   | 196,299   | 397,338     |
|                              | Shore        | 9,059  | 912,145   | 312,783   | 617,893     |
| Total Durable Expenditures   |              | 39,695 | 4,887,434 | 1,785,645 | 2,901,673   |
| Total State Economic Impacts |              | 55,407 | 6,475,640 | 2,324,056 | 3,966,505   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 47,429            | Fishing Tackle             | 883,735                    |
| Private Boat                                    | 599,814           | Other Equipment            | 384,610                    |
| Shore   | 724,306           | Boat Expenses              | 2,281,695                  |
| Total   | 1,371,548         | Vehicle Expenses           | 275,233                    |
|   |                   | Second Home Expenses       | 23,100                     |
|   |                   | Total Durable Expenditures | 3,848,373                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 5,219,921                  |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Coastal       | 1,099 | 1,033 | 1,109 | 1,181 | 1,263 | 1,334 | 1,001 | 1,059 | 975   | 1,227 |
| Non-Coastal   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Out-of-State  | 643   | 629   | 553   | 514   | 540   | 807   | 819   | 674   | 613   | 913   |
| Total Anglers | 1,741 | 1,662 | 1,662 | 1,695 | 1,803 | 2,141 | 1,821 | 1,733 | 1,588 | 2,140 |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 188    | 132    | 141    | 160    | 161    | 192    | 229    | 256    | 250    | 216    |
| Private     | 15,352 | 17,003 | 14,771 | 12,325 | 12,231 | 13,759 | 13,029 | 12,393 | 11,756 | 14,728 |
| Shore       | 33,470 | 31,818 | 30,883 | 27,193 | 24,914 | 30,016 | 29,138 | 26,046 | 28,398 | 29,043 |
| Total Trips | 49,010 | 48,952 | 45,795 | 39,678 | 37,306 | 43,968 | 42,395 | 38,695 | 40,404 | 43,987 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2</sup>**

|                              |   | 2009  | 2010   | 2011   | 2012   | 2013   | 2014  | 2015  | 2016   | 2017   | 2018  |
|------------------------------|---|-------|--------|--------|--------|--------|-------|-------|--------|--------|-------|
| Bluefish                     | H | 5,502 | 6,046  | 5,575  | 2,319  | 2,037  | 3,262 | 2,081 | 1,492  | 1,591  | 2,052 |
|                              | R | 5,169 | 13,455 | 8,484  | 8,079  | 10,002 | 6,293 | 5,361 | 4,751  | 1,716  | 3,161 |
| Dolphinfish <sup>3</sup>     | H | 801   | 485    | 771    | 949    | 806    | 1,179 | 1,505 | 799    | 1,285  | 1,170 |
|                              | R | 190   | 234    | 869    | 220    | 440    | 694   | 815   | 127    | 626    | 456   |
| Drum (kingfish) <sup>4</sup> | H | 5,342 | 8,187  | 10,137 | 9,676  | 6,043  | 6,745 | 3,507 | 4,762  | 2,079  | 5,920 |
|                              | R | 7,197 | 9,425  | 8,447  | 10,159 | 6,505  | 7,265 | 9,140 | 5,872  | 1,978  | 7,340 |
| Drum (spotted seatrout)      | H | 639   | 1,187  | 931    | 1,683  | 1,122  | 1,111 | 504   | 963    | 978    | 929   |
|                              | R | 5,178 | 9,718  | 7,839  | 9,611  | 5,723  | 7,280 | 6,131 | 4,784  | 5,846  | 5,306 |
| Gray snapper                 | H | 811   | 447    | 404    | 464    | 2,102  | 2,556 | 1,819 | 3,778  | 3,355  | 2,513 |
|                              | R | 7,881 | 1,732  | 2,017  | 6,419  | 7,167  | 8,095 | 6,469 | 11,947 | 10,260 | 8,575 |
| Jack (Florida pompano)       | H | 513   | 1,712  | 507    | 1,602  | 630    | 575   | 486   | 380    | 612    | 557   |
|                              | R | 840   | 1,093  | 2,676  | 2,666  | 1,261  | 1,780 | 984   | 1,190  | 827    | 1,033 |
| King mackerel                | H | 596   | 391    | 252    | 181    | 179    | 208   | 219   | 409    | 489    | 513   |
|                              | R | 99    | 132    | 89     | 83     | 62     | 146   | 122   | 67     | 171    | 152   |
| Porgies (sheepshead)         | H | 982   | 1,893  | 1,420  | 1,015  | 1,076  | 2,248 | 1,129 | 1,942  | 1,240  | 1,740 |
|                              | R | 1,559 | 1,879  | 1,704  | 2,315  | 1,467  | 2,767 | 2,520 | 2,272  | 1,114  | 2,341 |
| Red drum                     | H | 421   | 721    | 788    | 878    | 1,008  | 1,028 | 982   | 1,310  | 979    | 1,070 |
|                              | R | 2,276 | 6,759  | 4,192  | 2,615  | 5,197  | 5,075 | 4,132 | 4,734  | 4,727  | 5,375 |
| Spanish mackerel             | H | 1,556 | 2,525  | 1,304  | 777    | 2,666  | 1,349 | 230   | 1,619  | 651    | 957   |
|                              | R | 699   | 1,353  | 522    | 254    | 1,892  | 920   | 219   | 1,137  | 454    | 1,585 |

<sup>1</sup> Non-coastal data are not available because all of the state's residents are considered coastal county residents.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> Dolphinfish include dolphin and dolphinfish.<sup>4</sup> Drum (kingfish) include kingfish genus and Gulf kingfish.

**2017 Florida State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 2,245,127 (8.7%)    | 557,308 (7.1%)  | 8,385,577 (6.5%) | 378 (5.6%)                   | 532 (5.2%)                          | 984                               | 0.97  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>1</sup>**

|                                   |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Firms    | 217    | 280    | 294    | 307    | 300    | 315    | 300    | 316    | 280    |
|                                   | Receipts | 12,473 | 14,635 | 14,618 | 17,557 | 17,214 | 22,329 | 21,841 | 20,834 | 19,651 |
| Seafood sales, retail             | Firms    | 316    | 361    | 362    | 383    | 338    | 346    | 355    | 320    | 316    |
|                                   | Receipts | 25,667 | 27,964 | 29,037 | 30,765 | 25,332 | 26,433 | 29,033 | 24,296 | 27,937 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1</sup>**

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 25     | 27     | 24     | 27     | 25     | 27     | 27     | 23     | 23     |
|                                   | Employees      | 1,143  | 1,269  | 1,095  | 1,608  | 1,374  | 1,419  | 1,429  | 1,535  | 1,942  |
|                                   | Payroll        | 46,235 | 45,772 | 42,612 | 51,735 | 50,003 | 50,556 | 58,246 | 63,039 | 79,173 |
| Seafood sales, wholesale          | Establishments | 215    | 229    | 250    | 226    | 234    | 233    | 242    | 239    | 230    |
|                                   | Employees      | 1,762  | 1,747  | 1,913  | 1,957  | 1,878  | 1,974  | 2,055  | 1,849  | 2,098  |
|                                   | Payroll        | 72,159 | 70,889 | 77,115 | 75,945 | 79,266 | 83,964 | 90,247 | 83,818 | 89,907 |
| Seafood sales, retail             | Establishments | 158    | 145    | 145    | 151    | 165    | 166    | 181    | 191    | 176    |
|                                   | Employees      | 885    | 865    | 849    | 945    | 909    | 1,037  | 1,137  | 1,133  | 1,140  |
|                                   | Payroll        | 21,182 | 20,783 | 20,158 | 21,577 | 23,476 | 25,844 | 29,066 | 26,981 | 29,146 |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 261     | 248     | 246     | 258     | 259     | 263     | 278     | 281     | 269     |
|  | Employees      | 8,221   | 7,363   | 7,909   | 8,621   | 8,813   | 9,608   | 10,913  | 11,170  | 11,114  |
|  | Payroll        | 296,537 | 302,909 | 325,942 | 374,831 | 390,853 | 448,514 | 488,050 | 512,454 | 516,473 |
| Deep Sea Freight Transportation                | Establishments | 58      | 61      | 65      | 75      | 69      | 77      | 76      | 65      | 58      |
|  | Employees      | 2,801   | 2,279   | 2,374   | 3,345   | 2,485   | 2,015   | 2,154   | 1,639   | 2,189   |
|  | Payroll        | 180,139 | 159,025 | 177,386 | 231,887 | 140,564 | 131,069 | 137,786 | 113,897 | 193,568 |
| Deep Sea Passenger Transportation              | Establishments | 33      | 29      | 29      | 39      | 31      | 28      | 32      | 33      | 38      |
|  | Employees      | ds      | ds      | ds      | ds      | ds      | ds      | 10,510  | 10,161  | 9,882   |
|  | Payroll        | ds      | ds      | ds      | ds      | ds      | ds      | 967,938 | 864,475 | 970,607 |
| Coastal and Great Lakes Freight Transportation | Establishments | 42      | 50      | 54      | 60      | 47      | 62      | 57      | 62      | 64      |
|  | Employees      | 972     | 709     | 753     | 1,381   | 1,050   | 1,743   | 1,815   | 1,966   | 2,245   |
|  | Payroll        | 37,774  | 50,217  | 53,341  | 100,402 | 82,078  | 175,366 | 173,004 | 199,592 | 242,810 |
| Port and Harbor Operations                     | Establishments | 32      | 34      | 32      | 66      | 61      | 56      | 55      | 54      | 50      |
|  | Employees      | 527     | 470     | 377     | 2,082   | 555     | 588     | 987     | 1,006   | 1,560   |
|  | Payroll        | 19,006  | 20,525  | 16,879  | 72,554  | 25,439  | 20,647  | 32,032  | 32,969  | 39,956  |
| Marine Cargo Handling                          | Establishments | 59      | 55      | 64      | 43      | 58      | 61      | 69      | 63      | 72      |
|  | Employees      | 7,288   | 7,547   | 7,484   | 4,598   | 6,258   | 6,992   | 7,834   | 7,048   | 6,269   |
|  | Payroll        | 185,309 | 191,560 | 195,458 | 86,461  | 188,997 | 179,024 | 208,186 | 191,828 | 210,284 |
| Navigational Services to Shipping              | Establishments | 145     | 145     | 150     | 151     | 180     | 190     | 196     | 194     | 226     |
|  | Employees      | 829     | 980     | 1,047   | 853     | 1,390   | 878     | 861     | 922     | 1,074   |
|  | Payroll        | 60,641  | 76,853  | 75,561  | 68,366  | 130,893 | 74,185  | 72,483  | 73,708  | 81,050  |
| Marinas  | Establishments | 428     | 430     | 411     | 432     | 444     | 464     | 466     | 458     | 450     |
|  | Employees      | 4,665   | 4,439   | 4,657   | 4,918   | 5,076   | 5,421   | 5,472   | 5,405   | 5,481   |
|  | Payroll        | 132,955 | 133,017 | 142,997 | 148,573 | 145,265 | 168,185 | 171,354 | 176,315 | 184,529 |

<sup>1</sup> All data presented on this page are for the entire state of Florida, not just East Florida.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> ds = Data are suppressed.

# Tables | Georgia





**2018 Economic Impacts of the Georgia Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 18,267       | 3,049 | 669    | 1,105       | 1,912           | 104   | 41     | 55          |
| Commercial Harvesters              | 678          | 30    | 10     | 15          | 678             | 30    | 10     | 15          |
| Seafood Processors & Dealers       | 1,536        | 141   | 54     | 72          | 205             | 19    | 7      | 10          |
| Importers                          | 7,069        | 2,288 | 367    | 697         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 1,489        | 214   | 74     | 104         | 42              | 6     | 2      | 3           |
| Retail                             | 7,495        | 377   | 164    | 218         | 987             | 49    | 21     | 28          |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>**

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 10,857 | 13,134 | 16,028 | 16,390 | 10,925 | 15,471 | 17,134 | 13,466 | 16,115 | 17,429 |
| Finfish            | 56     | 35     | 42     | 66     | 90     | 80     | 50     | 56     | 67     | 89     |
| Shellfish          | 10,800 | 13,099 | 15,684 | 16,324 | 9,898  | 14,401 | 16,623 | 13,329 | 16,049 | 17,340 |
| Other              | 0      | 0      | 302    | 0      | 937    | 990    | 461    | 81     | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 3,840  | 2,658  | 3,345  | 4,267  | 3,975  | 3,774  | 4,248  | 4,011  | 4,993  | 5,956  |
| Clams              | 601    | 572    | 831    | 834    | NA     | NA     | 2,284  | 2,402  | 2,262  | 2,247  |
| Eastern oyster     | 66     | NA     | 131    | 143    | 127    | 150    | 204    | 148    | 178    | 126    |
| Kingfishes         | 1      | 9      | 13     | 5      | 3      | 6      | 5      | 0      | 3      | 19     |
| Quahog clams       | 601    | 572    | 831    | 834    | NA     | NA     | 2,284  | 2,402  | 2,262  | 2,247  |
| Shad               | 33     | NA     | NA     | 45     | 71     | 48     | 27     | 8      | 51     | 43     |
| Shrimp             | 6,279  | 9,830  | 11,337 | 11,051 | 5,789  | 10,474 | 9,886  | 6,767  | 8,615  | 9,009  |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                    | 2009  | 2010  | 2011   | 2012  | 2013   | 2014   | 2015   | 2016  | 2017  | 2018  |
|--------------------|-------|-------|--------|-------|--------|--------|--------|-------|-------|-------|
| Total              | 6,838 | 7,030 | 12,782 | 8,490 | 17,681 | 18,421 | 13,672 | 7,455 | 7,157 | 7,857 |
| Finfish            | 51    | 27    | 32     | 58    | 76     | 70     | 36     | 21    | 57    | 59    |
| Shellfish          | 6,787 | 7,002 | 8,005  | 8,432 | 5,180  | 5,477  | 7,073  | 6,114 | 7,100 | 7,798 |
| Other              | 0     | 0     | 4,745  | 0     | 12,424 | 12,873 | 6,563  | 1,320 | 0     | 0     |
| <b>Key Species</b> |       |       |        |       |        |        |        |       |       |       |
| Blue crab          | 3,598 | 2,329 | 3,427  | 4,265 | 3,215  | 2,669  | 2,934  | 3,320 | 3,839 | 4,519 |
| Clams              | 102   | 98    | 147    | 144   | NA     | NA     | 371    | 348   | 354   | 338   |
| Eastern oyster     | 15    | NA    | 26     | 25    | 26     | 26     | 33     | 24    | 29    | 20    |
| Kingfishes         | 1     | 8     | 10     | 4     | 3      | 4      | 3      | 0     | 2     | 12    |
| Quahog clams       | 102   | 98    | 147    | 144   | NA     | NA     | 371    | 348   | 354   | 338   |
| Shad               | 32    | NA    | NA     | 43    | 62     | 53     | 23     | 6     | 46    | 33    |
| Shrimp             | 3,058 | 4,519 | 4,375  | 3,977 | 1,918  | 2,780  | 3,735  | 2,422 | 2,878 | 2,921 |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| Blue crab      | 1.07 | 1.14 | 0.98 | 1.00 | 1.24 | 1.41 | 1.45 | 1.21 | 1.30 | 1.32 |
| Clams          | 5.91 | 5.80 | 5.65 | 5.78 | NA   | NA   | 6.15 | 6.91 | 6.39 | 6.65 |
| Eastern oyster | 4.24 | NA   | 5.09 | 5.73 | 4.85 | 5.71 | 6.26 | 6.17 | 6.19 | 6.46 |
| Kingfishes     | 1.03 | 1.10 | 1.27 | 1.28 | 1.30 | 1.67 | 1.46 | 1.40 | 1.14 | 1.59 |
| Quahog clams   | 5.91 | 5.80 | 5.65 | 5.78 | NA   | NA   | 6.15 | 6.91 | 6.39 | 6.65 |
| Shad           | 1.04 | NA   | NA   | 1.06 | 1.13 | 0.92 | 1.13 | 1.32 | 1.13 | 1.32 |
| Shrimp         | 2.05 | 2.18 | 2.59 | 2.78 | 3.02 | 3.77 | 2.65 | 2.79 | 2.99 | 3.08 |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Georgia Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|------------------------------|--------------|--------------|--------------|---------------|--------------------|
| Trip Impacts by Fishing Mode | For-Hire     | 89           | 8,853        | 2,987         | 5,230              |
|                              | Private Boat | 786          | 59,166       | 18,933        | 38,992             |
|                              | Shore        | 1,889        | 165,027      | 54,508        | 101,865            |
| Total Durable Expenditures   |              | 1,047        | 110,616      | 45,535        | 74,410             |
| Total State Economic Impacts |              | 3,811        | 343,662      | 121,963       | 220,496            |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 5,173                    | Fishing Tackle             | 38,023                            |
| Private Boat                                    | 61,121                   | Other Equipment            | 12,359                            |
| Shore   | 120,647                  | Boat Expenses              | 41,495                            |
| Total   | 186,941                  | Vehicle Expenses           | 19,184                            |
|   |                          | Second Home Expenses       | 0                                 |
|   |                          | Total Durable Expenditures | 111,060                           |
| Total State Trip and Durable Goods Expenditures |                          |                            | 298,001                           |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal       | 146         | 145         | 146         | 134         | 99          | 125         | 81          | 110         | 110         | 91          |
| Non-Coastal   | 91          | 136         | 131         | 96          | 72          | 115         | 80          | 89          | 73          | 81          |
| Out-of-State  | 45          | 61          | 78          | 74          | 53          | 70          | 70          | 49          | 57          | 74          |
| Total Anglers | 282         | 342         | 355         | 303         | 225         | 310         | 231         | 248         | 241         | 247         |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 15          | 7           | 16          | 20          | 21          | 31          | 34          | 26          | 28          | 28          |
| Private     | 1,152       | 1,164       | 1,236       | 1,184       | 1,228       | 1,262       | 1,360       | 1,375       | 1,569       | 1,604       |
| Shore       | 1,525       | 1,536       | 1,650       | 1,786       | 2,071       | 2,444       | 2,715       | 2,480       | 3,028       | 2,960       |
| Total Trips | 2,693       | 2,707       | 2,902       | 2,990       | 3,320       | 3,737       | 4,109       | 3,880       | 4,624       | 4,593       |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1</sup>**

|                          |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|--------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Black drum               | H | 42          | 138         | 26          | 43          | 65          | 48          | 48          | 96          | 64          | 129         |
|                          | R | 60          | 73          | 20          | 53          | 35          | 22          | 56          | 54          | 85          | 189         |
| Black sea bass           | H | 41          | 38          | 98          | 53          | 234         | 167         | 123         | 19          | 26          | 79          |
|                          | R | 307         | 513         | 526         | 425         | 826         | 1,925       | 1,087       | 314         | 681         | 849         |
| Bluefish                 | H | 6           | 27          | 10          | 21          | 17          | 70          | 49          | 12          | 9           | 91          |
|                          | R | 163         | 249         | 124         | 148         | 42          | 261         | 427         | 96          | 30          | 295         |
| Drum (Atlantic croaker)  | H | 185         | 121         | 130         | 105         | 265         | 290         | 790         | 402         | 371         | 241         |
|                          | R | 1,170       | 652         | 749         | 781         | 1,362       | 2,058       | 1,321       | 1,179       | 1,060       | 1,404       |
| Drum (Southern kingfish) | H | 1,545       | 1,772       | 1,820       | 1,346       | 1,732       | 2,199       | 3,437       | 1,505       | 1,825       | 3,383       |
|                          | R | 1,538       | 1,522       | 1,689       | 1,778       | 1,206       | 984         | 1,490       | 1,742       | 1,283       | 2,234       |
| Drum (spotted seatrout)  | H | 1,363       | 1,135       | 762         | 1,207       | 937         | 724         | 741         | 1,290       | 1,060       | 1,168       |
|                          | R | 2,126       | 1,676       | 1,348       | 2,197       | 1,321       | 1,688       | 1,764       | 2,113       | 2,437       | 2,113       |
| Porgies (sheepshead)     | H | 154         | 240         | 282         | 141         | 129         | 56          | 121         | 187         | 159         | 403         |
|                          | R | 72          | 91          | 102         | 58          | 114         | 62          | 128         | 69          | 75          | 237         |
| Red drum                 | H | 164         | 443         | 201         | 96          | 237         | 212         | 201         | 290         | 468         | 607         |
|                          | R | 346         | 926         | 370         | 220         | 505         | 751         | 961         | 601         | 1,177       | 1,046       |
| Sharks <sup>2</sup>      | H | 12          | 8           | 11          | 14          | 26          | < 1         | 8           | 19          | 4           | 5           |
|                          | R | 756         | 564         | 759         | 1,015       | 907         | 1,059       | 902         | 1,085       | 569         | 681         |
| Southern flounder        | H | 83          | 81          | 55          | 43          | 52          | 58          | 130         | 84          | 101         | 117         |
|                          | R | 18          | 6           | 44          | 9           | 22          | 22          | 127         | 34          | 80          | 14          |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> Sharks include unidentified (sharks), shark species, unidentified sharks, requiem shark family, requiem shark, Atlantic sharpnose shark, requiem shark genus, and blacktip shark.

## 2017 Georgia State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 915,043 (3.6%)      | 233,500 (3%)    | 3,888,928 (3%) | 192 (2.9%)                   | 299 (2.9%)                          | 564                               | 0.04  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 51    | 52    | 61    | 71    | 60    | 62    | 87    | 100   | 96    |
|                                   | Receipts | 3,817 | 5,458 | 5,540 | 4,974 | 4,378 | 5,471 | 6,265 | 7,582 | 9,137 |
| Seafood sales, retail             | Firms    | 98    | 96    | 89    | 97    | 77    | 103   | 84    | 75    | 72    |
|                                   | Receipts | 5,701 | 6,474 | 8,646 | 8,233 | 6,932 | 9,338 | 8,379 | 8,298 | 9,462 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 6      | 6      | 5      | 6      | 5      | 7      | 6      | 7      | 5      |
|                                   | Employees      | ds     | 1,056  | 1,022  | 854    | 945    | 895    | 854    | 917    | 641    |
|                                   | Payroll        | ds     | 37,343 | 39,433 | 32,928 | 35,987 | 37,122 | 37,368 | 38,634 | 31,721 |
| Seafood sales, wholesale          | Establishments | 33     | 36     | 28     | 18     | 28     | 24     | 23     | 35     | 24     |
|                                   | Employees      | 532    | 514    | 562    | 468    | 469    | 792    | 701    | 731    | 198    |
|                                   | Payroll        | 18,628 | 20,075 | 20,660 | 15,459 | 17,326 | 24,726 | 26,254 | 28,745 | 6,327  |
| Seafood sales, retail             | Establishments | 42     | 48     | 51     | 54     | 60     | 62     | 70     | 70     | 70     |
|                                   | Employees      | 162    | 176    | 176    | 214    | 210    | 229    | 248    | 283    | 269    |
|                                   | Payroll        | 2,447  | 2,502  | 2,566  | 3,425  | 3,390  | 3,745  | 4,539  | 4,966  | 4,863  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009   | 2010   | 2011    | 2012   | 2013    | 2014    | 2015    | 2016   | 2017    |
|--|----------------|--------|--------|---------|--------|---------|---------|---------|--------|---------|
| Ship and Boat Building                         | Establishments | 14     | 12     | 15      | 14     | 15      | 16      | 17      | 15     | 15      |
|  | Employees      | ds     | ds     | ds      | ds     | ds      | ds      | 3,150   | 2,272  | 2,384   |
|  | Payroll        | ds     | ds     | ds      | ds     | ds      | ds      | 110,951 | 81,978 | 86,762  |
| Deep Sea Freight Transportation                | Establishments | 13     | 14     | 12      | 12     | 7       | 9       | 9       | 9      | 11      |
|  | Employees      | 29     | ds     | 51      | 236    | 28      | 63      | 64      | 70     | 39      |
|  | Payroll        | 2,192  | 2,465  | 4,833   | 11,238 | 2,311   | 3,856   | 4,421   | 5,255  | 2,904   |
| Deep Sea Passenger Transportation              | Establishments | NA     | NA     | 1       | 1      | 1       | 1       | 2       | 1      | NA      |
|  | Employees      | NA     | NA     | ds      | ds     | ds      | ds      | ds      | 0      | NA      |
|  | Payroll        | NA     | NA     | ds      | ds     | ds      | ds      | ds      | 0      | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 5      | 4      | 4       | 3      | 4       | 7       | 8       | 8      | 7       |
|  | Employees      | ds     | ds     | ds      | ds     | ds      | ds      | 66      | 84     | 71      |
|  | Payroll        | 1,700  | ds     | ds      | ds     | ds      | ds      | 4,356   | 5,074  | 4,661   |
| Port and Harbor Operations                     | Establishments | 5      | 4      | 2       | 13     | 7       | 4       | 4       | 5      | 4       |
|  | Employees      | ds     | ds     | ds      | ds     | ds      | ds      | 68      | 47     | 30      |
|  | Payroll        | ds     | ds     | ds      | ds     | ds      | ds      | 2,961   | 3,230  | 1,200   |
| Marine Cargo Handling                          | Establishments | 18     | 17     | 20      | 10     | 19      | 19      | 18      | 17     | 17      |
|  | Employees      | 3,707  | 2,971  | 4,655   | ds     | 2,986   | 3,561   | 4,956   | 3,966  | 4,022   |
|  | Payroll        | 87,410 | 84,675 | 108,674 | ds     | 120,985 | 124,394 | 117,785 | 98,105 | 105,327 |
| Navigational Services to Shipping              | Establishments | 9      | 8      | 8       | 10     | 8       | 7       | 9       | 8      | 10      |
|  | Employees      | ds     | ds     | ds      | ds     | ds      | ds      | 203     | 149    | 142     |
|  | Payroll        | 12,185 | 11,237 | ds      | ds     | ds      | ds      | 12,202  | 9,904  | 10,117  |
| Marinas  | Establishments | 58     | 62     | 63      | 63     | 59      | 65      | 67      | 63     | 66      |
|  | Employees      | 541    | 631    | 580     | 636    | 644     | 586     | 639     | 648    | 747     |
|  | Payroll        | 15,736 | 17,428 | 16,986  | 17,921 | 17,768  | 18,604  | 20,210  | 22,546 | 25,197  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Tables | North Carolina



## North Carolina | Commercial Fisheries

## 2018 Economic Impacts of the North Carolina Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 8,048        | 862   | 232    | 352         | 4,747           | 272   | 111    | 148         |
| Commercial Harvesters              | 2,021        | 134   | 53     | 73          | 2,021           | 134   | 53     | 73          |
| Seafood Processors & Dealers       | 552          | 43    | 17     | 22          | 385             | 30    | 12     | 15          |
| Importers                          | 1,495        | 484   | 78     | 148         | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 390          | 49    | 17     | 23          | 114             | 14    | 5      | 7           |
| Retail                             | 3,590        | 152   | 67     | 87          | 2,228           | 94    | 41     | 53          |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015    | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|
| Total              | 78,288 | 80,309 | 71,099 | 73,720 | 79,636 | 94,900 | 106,080 | 98,532 | 97,705 | 78,816 |
| Finfish            | 34,994 | 33,836 | 31,478 | 31,752 | 30,347 | 37,947 | 34,109  | 34,944 | 36,885 | 32,562 |
| Shellfish          | 43,294 | 46,473 | 39,620 | 41,968 | 49,289 | 56,953 | 71,971  | 63,585 | 60,815 | 46,252 |
| Other              | 1      | 0      | 0      | 0      | 0      | 0      | 0       | 3      | 5      | 1      |
| <b>Key Species</b> |        |        |        |        |        |        |         |        |        |        |
| Atlantic croaker   | 2,988  | 3,409  | 3,160  | 2,132  | 1,727  | 1,865  | 1,651   | 2,290  | 1,135  | 1,635  |
| Black sea bass     | 1,401  | 947    | 627    | 688    | 869    | 1,408  | 1,354   | 1,398  | 1,859  | 1,517  |
| Blue crab          | 27,463 | 26,537 | 21,295 | 22,779 | 30,001 | 34,050 | 33,717  | 24,303 | 22,238 | 19,669 |
| Clams              | 2,093  | 2,574  | 1,862  | 2,239  | 2,309  | 2,912  | 5,101   | 2,696  | 2,151  | 1,603  |
| Flounders          | 10,122 | 10,907 | 8,893  | 7,419  | 7,066  | 13,058 | 12,845  | 12,057 | 11,967 | 10,719 |
| Grouper            | 1,879  | 1,729  | 1,462  | 1,421  | 1,247  | 1,263  | 1,108   | 1,126  | 1,012  | 1,112  |
| King mackerel      | 1,498  | 645    | 1,062  | 831    | 878    | 1,204  | 786     | 902    | 1,265  | 1,147  |
| Shrimp             | 8,527  | 10,689 | 10,888 | 13,293 | 12,945 | 14,146 | 16,804  | 29,751 | 29,619 | 20,047 |
| Snappers           | 1,074  | 956    | 1,004  | 900    | 917    | 865    | 797     | 955    | 998    | 1,172  |
| Tunas              | 2,923  | 1,490  | 2,437  | 4,400  | 3,208  | 3,721  | 3,193   | 3,337  | 5,330  | 4,550  |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 69,543 | 72,224 | 66,269 | 56,902 | 50,337 | 61,232 | 65,573 | 61,010 | 62,716 | 54,915 |
| Finfish            | 32,910 | 32,720 | 29,740 | 22,945 | 22,144 | 28,908 | 22,946 | 20,077 | 19,298 | 17,481 |
| Shellfish          | 36,632 | 39,502 | 36,529 | 33,956 | 28,193 | 32,325 | 42,627 | 40,932 | 43,415 | 37,433 |
| Other              | 1      | 2      | 0      | 1      | 0      | 0      | 0      | 1      | 3      | 1      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Atlantic croaker   | 6,135  | 7,312  | 5,054  | 3,107  | 1,928  | 2,630  | 1,819  | 2,164  | 1,008  | 1,644  |
| Black sea bass     | 615    | 401    | 272    | 256    | 330    | 527    | 468    | 439    | 631    | 497    |
| Blue crab          | 29,707 | 30,683 | 30,035 | 26,787 | 22,203 | 26,231 | 32,124 | 25,645 | 19,273 | 17,014 |
| Clams              | 351    | 355    | 295    | 396    | 347    | 431    | 414    | 339    | 289    | 211    |
| Flounders          | 5,256  | 5,001  | 4,102  | 2,736  | 2,728  | 4,584  | 4,080  | 3,021  | 2,957  | 2,558  |
| Grouper            | 637    | 561    | 408    | 382    | 311    | 299    | 259    | 261    | 223    | 239    |
| King mackerel      | 778    | 329    | 408    | 297    | 345    | 550    | 391    | 437    | 629    | 507    |
| Shrimp             | 5,408  | 5,955  | 5,140  | 6,141  | 4,859  | 4,691  | 9,077  | 13,832 | 13,896 | 9,730  |
| Snappers           | 374    | 320    | 326    | 279    | 276    | 251    | 231    | 279    | 281    | 323    |
| Tunas              | 1,028  | 703    | 1,056  | 1,482  | 1,283  | 1,460  | 1,085  | 1,239  | 1,802  | 1,300  |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016 | 2017 | 2018 |
|------------------|------|------|------|------|------|------|-------|------|------|------|
| Atlantic croaker | 0.49 | 0.47 | 0.63 | 0.69 | 0.90 | 0.71 | 0.91  | 1.06 | 1.13 | 0.99 |
| Black sea bass   | 2.28 | 2.36 | 2.30 | 2.69 | 2.64 | 2.67 | 2.89  | 3.18 | 2.94 | 3.05 |
| Blue crab        | 0.92 | 0.86 | 0.71 | 0.85 | 1.35 | 1.30 | 1.05  | 0.95 | 1.15 | 1.16 |
| Clams            | 5.97 | 7.25 | 6.30 | 5.65 | 6.65 | 6.76 | 12.31 | 7.96 | 7.45 | 7.60 |
| Flounders        | 1.93 | 2.18 | 2.17 | 2.71 | 2.59 | 2.85 | 3.15  | 3.99 | 4.05 | 4.19 |
| Grouper          | 2.95 | 3.08 | 3.58 | 3.72 | 4.01 | 4.22 | 4.28  | 4.31 | 4.53 | 4.65 |
| King mackerel    | 1.93 | 1.96 | 2.60 | 2.79 | 2.54 | 2.19 | 2.01  | 2.07 | 2.01 | 2.26 |
| Shrimp           | 1.58 | 1.79 | 2.12 | 2.16 | 2.66 | 3.02 | 1.85  | 2.15 | 2.13 | 2.06 |
| Snappers         | 2.87 | 2.99 | 3.08 | 3.22 | 3.32 | 3.44 | 3.45  | 3.42 | 3.55 | 3.63 |
| Tunas            | 2.84 | 2.12 | 2.31 | 2.97 | 2.50 | 2.55 | 2.94  | 2.69 | 2.96 | 3.50 |

**2018 Economic Impacts of North Carolina Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 1,108  | 106,097   | 35,933  | 61,076      |
|                              | Private Boat | 2,114  | 216,015   | 75,370  | 130,653     |
|                              | Shore        | 12,378 | 1,237,577 | 435,587 | 752,571     |
| Total Durable Expenditures   |              | 9,194  | 1,055,527 | 400,520 | 638,900     |
| Total State Economic Impacts |              | 24,795 | 2,615,215 | 947,410 | 1,583,200   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 64,271            | Fishing Tackle             | 251,621                    |
| Private Boat                                    | 203,570           | Other Equipment            | 101,919                    |
| Shore   | 877,104           | Boat Expenses              | 636,628                    |
| Total   | 1,144,946         | Vehicle Expenses           | 59,159                     |
|   |                   | Second Home Expenses       | 24,454                     |
|   |                   | Total Durable Expenditures | 1,073,781                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 2,218,727                  |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Coastal       | 446   | 544   | 490   | 614   | 564   | 549   | 479   | 541   | 481   | 460   |
| Non-Coastal   | 259   | 296   | 254   | 283   | 240   | 301   | 239   | 281   | 235   | 268   |
| Out-of-State  | 976   | 1,073 | 755   | 764   | 601   | 805   | 830   | 1,066 | 795   | 809   |
| Total Anglers | 1,681 | 1,914 | 1,499 | 1,661 | 1,405 | 1,656 | 1,548 | 1,889 | 1,512 | 1,537 |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 129    | 139    | 129    | 159    | 161    | 130    | 148    | 181    | 195    | 148    |
| Private     | 4,822  | 4,983  | 5,213  | 5,055  | 4,848  | 4,896  | 4,993  | 4,860  | 5,045  | 4,279  |
| Shore       | 14,393 | 15,052 | 14,127 | 13,342 | 13,127 | 13,934 | 15,216 | 16,158 | 17,258 | 12,197 |
| Total Trips | 19,345 | 20,173 | 19,469 | 18,555 | 18,136 | 18,960 | 20,357 | 21,199 | 22,497 | 16,624 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|   |   | 2009   | 2010  | 2011   | 2012  | 2013   | 2014   | 2015   | 2016  | 2017  | 2018   |
|---|---|--------|-------|--------|-------|--------|--------|--------|-------|-------|--------|
| Black sea bass                                | H | 153    | 184   | 180    | 134   | 90     | 333    | 320    | 195   | 317   | 86     |
|   | R | 1,681  | 2,224 | 2,570  | 4,650 | 3,041  | 5,023  | 5,036  | 5,536 | 6,191 | 2,224  |
| Bluefish                                      | H | 3,190  | 3,692 | 3,614  | 2,684 | 4,288  | 4,419  | 4,123  | 4,489 | 3,173 | 3,305  |
|   | R | 6,448  | 7,420 | 7,150  | 3,268 | 7,051  | 5,863  | 6,356  | 6,803 | 8,256 | 7,912  |
| Dolphinfish <sup>3</sup>                      | H | 596    | 615   | 639    | 427   | 323    | 403    | 740    | 481   | 280   | 495    |
|   | R | 4      | 6     | 16     | 5     | 5      | 7      | 74     | 3     | 3     | 28     |
| Drum (Atlantic croaker and spot) <sup>4</sup> | H | 5,156  | 5,111 | 7,354  | 3,526 | 7,422  | 10,279 | 4,010  | 3,038 | 3,085 | 2,542  |
|   | R | 10,470 | 8,187 | 11,999 | 6,875 | 12,243 | 14,391 | 12,617 | 9,086 | 6,534 | 6,374  |
| Drum (spotted seatrout)                       | H | 1,858  | 631   | 724    | 1,603 | 1,108  | 725    | 249    | 979   | 1,218 | 449    |
|   | R | 4,463  | 7,658 | 7,421  | 4,916 | 4,279  | 3,949  | 4,824  | 6,475 | 5,148 | 15,238 |
| Flounder (lefteye and summer) <sup>5</sup>    | H | 296    | 401   | 291    | 283   | 229    | 443    | 227    | 94    | 227   | 102    |
|   | R | 4,052  | 4,435 | 3,226  | 4,025 | 4,012  | 3,290  | 2,781  | 2,877 | 2,990 | 1,497  |
| King mackerel                                 | H | 169    | 58    | 32     | 56    | 48     | 72     | 96     | 108   | 110   | 103    |
|   | R | 24     | 10    | < 1    | 6     | 9      | 35     | 17     | 44    | 95    | 76     |
| Spanish mackerel                              | H | 1,481  | 927   | 855    | 996   | 995    | 1,029  | 835    | 918   | 996   | 1,013  |
|   | R | 753    | 702   | 480    | 592   | 686    | 814    | 515    | 547   | 688   | 1,019  |
| Striped bass                                  | H | 32     | 109   | 249    | 24    | 58     | 21     | 41     | 20    | 73    | 161    |
|   | R | 290    | 332   | 808    | 501   | 361    | 374    | 343    | 1,089 | 3,691 | 1,867  |
| Yellowfin tuna                                | H | 36     | 42    | 33     | 70    | 53     | 44     | 38     | 80    | 119   | 61     |
|   | R | 1      | < 1   | < 1    | 9     | 1      | 7      | 2      | 29    | 18    | 4      |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> Dolphinfish include dolphin and dolphinfish.

<sup>4</sup> Drum (Atlantic croaker and spot) include spot and Atlantic croaker.

<sup>5</sup> Flounder (lefteye and summer) include lefteye flounder genus and summer flounder.



## North Carolina | Marine Economy

## 2017 North Carolina State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 760,638 (3%)        | 233,363 (3%)    | 3,774,377 (2.9%) | 176 (2.6%)                   | 282 (2.7%)                          | 547                               | 0.04  |

Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>2</sup>

|                       |          | 2009   | 2010  | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|----------|--------|-------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product       | Firms    | 34     | 40    | 50     | 46     | 58     | 63     | 72     | 69     | 59     |
| prep. & packaging     | Receipts | 1,297  | 1,652 | 2,705  | 1,630  | 4,605  | 4,599  | 4,715  | 4,204  | 3,535  |
| Seafood sales, retail | Firms    | 140    | 126   | 144    | 136    | 127    | 137    | 134    | 122    | 149    |
|                       | Receipts | 12,188 | 9,057 | 10,386 | 11,990 | 12,175 | 13,430 | 12,705 | 12,215 | 13,921 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 16     | 16     | 14     | 12     | 13     | 14     | 16     | 14     | 13     |
| prep. & packaging        | Employees      | 170    | 171    | ds     | ds     | 135    | 128    | 128    | 128    | 240    |
|                          | Payroll        | 4,461  | 4,749  | 4,830  | 5,084  | 4,563  | 4,720  | 6,582  | 6,366  | 10,124 |
| Seafood sales, wholesale | Establishments | 66     | 66     | 64     | 59     | 59     | 56     | 59     | 57     | 51     |
|                          | Employees      | 584    | 590    | 603    | 793    | 849    | 966    | 1,187  | 1,267  | 739    |
|                          | Payroll        | 17,383 | 18,348 | 19,344 | 23,949 | 26,687 | 30,292 | 38,462 | 43,297 | 27,127 |
| Seafood sales, retail    | Establishments | 77     | 82     | 84     | 88     | 86     | 93     | 91     | 93     | 93     |
|                          | Employees      | 243    | 247    | 244    | 289    | 254    | 278    | 255    | 282    | 316    |
|                          | Payroll        | 4,494  | 5,017  | 5,250  | 5,860  | 5,872  | 6,263  | 6,681  | 7,207  | 8,223  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

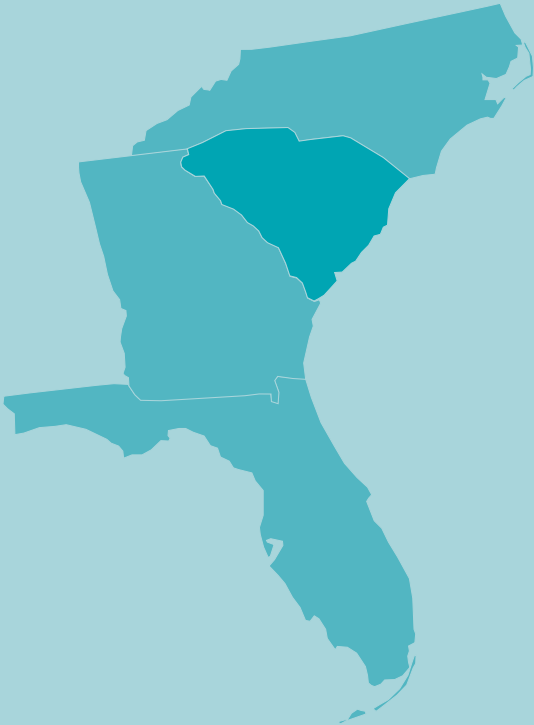
|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ship and Boat Building                         | Establishments | 64     | 60     | 57     | 60     | 52     | 52     | 62     | 63     | 66     |
|  | Employees      | 1,983  | 1,501  | 1,515  | 1,760  | 1,059  | 1,153  | 1,422  | 1,571  | 1,807  |
|  | Payroll        | 68,004 | 64,807 | 66,929 | 74,843 | 49,462 | 50,102 | 65,388 | 73,550 | 89,950 |
| Deep Sea Freight Transportation                | Establishments | 6      | 10     | 8      | 7      | 8      | 8      | 6      | 5      | 3      |
|  | Employees      | 9      | ds     | ds     | 25     | ds     | ds     | ds     | 0      | 0      |
|  | Payroll        | 617    | ds     | ds     | 1,579  | ds     | ds     | ds     | 0      | 0      |
| Deep Sea Passenger Transportation              | Establishments | 1      | NA     | 1      | NA     | NA     | NA     | NA     | 2      | NA     |
|  | Employees      | ds     | NA     | ds     | NA     | NA     | NA     | NA     | 0      | NA     |
|  | Payroll        | ds     | NA     | ds     | NA     | NA     | NA     | NA     | 0      | NA     |
| Coastal and Great Lakes Freight Transportation | Establishments | 6      | 4      | 5      | 6      | 5      | 5      | 6      | 5      | NA     |
|  | Employees      | ds     | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
|  | Payroll        | 2,366  | ds     | ds     | ds     | ds     | ds     | ds     | 0      | NA     |
| Port and Harbor Operations                     | Establishments | 2      | 4      | 3      | 9      | 5      | 2      | 2      | 2      | 4      |
|  | Employees      | ds     | ds     | ds     | ds     | 46     | ds     | ds     | 0      | 126    |
|  | Payroll        | ds     | ds     | ds     | ds     | 1,579  | ds     | ds     | 0      | 4,437  |
| Marine Cargo Handling                          | Establishments | 12     | 11     | 14     | 6      | 9      | 9      | 9      | 9      | 8      |
|  | Employees      | 914    | 600    | ds     | ds     | ds     | ds     | 797    | 594    | 627    |
|  | Payroll        | 20,707 | 20,755 | ds     | ds     | ds     | ds     | 14,767 | 14,204 | 26,470 |
| Navigational Services to Shipping              | Establishments | 11     | 13     | 11     | 8      | 10     | 13     | 13     | 12     | 17     |
|  | Employees      | 96     | 94     | 86     | 90     | 77     | 78     | 78     | 71     | 133    |
|  | Payroll        | 4,313  | 3,968  | 4,041  | 3,203  | 3,583  | 3,844  | 4,350  | 4,369  | 5,941  |
| Marinas  | Establishments | 105    | 102    | 104    | 102    | 99     | 100    | 105    | 109    | 92     |
|  | Employees      | 501    | 536    | 524    | 531    | 501    | 541    | 579    | 624    | 525    |
|  | Payroll        | 15,858 | 16,238 | 16,187 | 15,975 | 16,369 | 16,774 | 18,672 | 21,964 | 17,773 |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Tables | South Carolina



## South Carolina | Commercial Fisheries

## 2018 Economic Impacts of the South Carolina Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 1,644        | 175   | 50     | 74          | 1,145           | 72    | 29     | 39          |
| Commercial Harvesters              | 434          | 35    | 14     | 19          | 434             | 35    | 14     | 19          |
| Seafood Processors & Dealers       | 106          | 9     | 4      | 5           | 87              | 8     | 3      | 4           |
| Importers                          | 272          | 88    | 14     | 27          | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 87           | 10    | 4      | 5           | 31              | 4     | 1      | 2           |
| Retail                             | 744          | 32    | 14     | 18          | 593             | 25    | 11     | 14          |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 17,371 | 21,603 | 23,936 | 24,420 | 23,957 | 23,616 | 23,891 | 23,916 | 25,516 | 21,275 |
| Finfish            | 5,149  | 6,807  | 8,888  | 7,043  | 8,363  | 6,810  | 7,526  | 7,079  | 8,488  | 6,192  |
| Shellfish          | 12,222 | 14,796 | 15,049 | 17,377 | 15,594 | 16,805 | 16,364 | 16,837 | 17,028 | 15,083 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Black sea bass     | 362    | 213    | 181    | 303    | 471    | 341    | 246    | 156    | 251    | 187    |
| Blue crab          | 4,049  | 3,592  | 5,084  | 5,800  | 6,368  | 5,822  | 4,831  | 5,538  | 5,569  | 5,143  |
| Clams              | 866    | 980    | 823    | 583    | 699    | 585    | 570    | 726    | 434    | 580    |
| Groupers           | 1,808  | 1,524  | 1,709  | 1,119  | 1,394  | 1,412  | 1,199  | 754    | 1,042  | 1,094  |
| Oysters            | 1,734  | 1,906  | 1,975  | 2,153  | 2,402  | 2,243  | 2,258  | 2,321  | 2,612  | 2,967  |
| Sharks             | 39     | 75     | 99     | 108    | 55     | 87     | 18     | 33     | 42     | 38     |
| Shrimp             | 5,483  | 8,166  | 7,004  | 8,689  | 5,935  | 8,035  | 8,525  | 8,129  | 8,313  | 6,324  |
| Snappers           | 568    | 1,079  | 1,085  | 1,334  | 1,075  | 948    | 1,067  | 1,090  | 1,116  | 1,156  |
| Swordfish          | 1,116  | 2,289  | 3,628  | 2,105  | 2,370  | 1,298  | 1,437  | 1,785  | 1,815  | 1,614  |
| Tilefish           | 69     | 117    | 8      | 148    | 404    | 538    | 537    | NA     | 780    | 326    |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009  | 2010   | 2011   | 2012   | 2013   | 2014  | 2015   | 2016   | 2017   | 2018  |
|--------------------|-------|--------|--------|--------|--------|-------|--------|--------|--------|-------|
| Total              | 9,485 | 10,533 | 12,095 | 12,490 | 10,361 | 9,316 | 10,774 | 10,654 | 10,634 | 8,374 |
| Finfish            | 2,247 | 2,700  | 3,178  | 2,598  | 2,610  | 2,385 | 3,124  | 2,680  | 3,069  | 1,915 |
| Shellfish          | 7,238 | 7,833  | 8,916  | 9,892  | 7,750  | 6,931 | 7,650  | 7,973  | 7,566  | 6,459 |
| Other              | 0     | 0      | 0      | 0      | 0      | 0     | 0      | 0      | 0      | 0     |
| <b>Key Species</b> |       |        |        |        |        |       |        |        |        |       |
| Black sea bass     | 168   | 99     | 100    | 118    | 178    | 131   | 81     | 49     | 81     | 62    |
| Blue crab          | 4,001 | 3,274  | 5,439  | 5,900  | 5,134  | 3,833 | 3,746  | 4,382  | 4,390  | 3,890 |
| Clams              | 160   | 185    | 150    | 102    | 118    | 90    | 94     | 85     | 59     | 60    |
| Groupers           | 469   | 377    | 386    | 252    | 298    | 284   | 229    | 133    | 185    | 190   |
| Oysters            | 308   | 340    | 337    | 361    | 376    | 339   | 331    | 314    | 327    | 324   |
| Sharks             | 43    | 86     | 108    | 103    | 44     | 56    | 13     | 21     | 29     | 23    |
| Shrimp             | 2,717 | 3,949  | 2,914  | 3,433  | 2,039  | 2,615 | 3,406  | 3,136  | 2,755  | 2,159 |
| Snappers           | 194   | 365    | 358    | 425    | 321    | 270   | 305    | 287    | 305    | 307   |
| Swordfish          | 459   | 725    | 912    | 613    | 625    | 366   | 428    | 528    | 526    | 529   |
| Tilefish           | 30    | 46     | 4      | 51     | 160    | 194   | 171    | NA     | 191    | 83    |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| Black sea bass | 2.15 | 2.16 | 1.82 | 2.57 | 2.64 | 2.60 | 3.03 | 3.20 | 3.11 | 3.00 |
| Blue crab      | 1.01 | 1.10 | 0.93 | 0.98 | 1.24 | 1.52 | 1.29 | 1.26 | 1.27 | 1.32 |
| Clams          | 5.42 | 5.29 | 5.48 | 5.71 | 5.94 | 6.49 | 6.08 | 8.53 | 7.39 | 9.69 |
| Groupers       | 3.85 | 4.04 | 4.42 | 4.45 | 4.68 | 4.97 | 5.24 | 5.67 | 5.63 | 5.75 |
| Oysters        | 5.64 | 5.61 | 5.85 | 5.96 | 6.39 | 6.61 | 6.81 | 7.39 | 7.99 | 9.15 |
| Sharks         | 0.92 | 0.87 | 0.91 | 1.04 | 1.26 | 1.55 | 1.34 | 1.59 | 1.44 | 1.61 |
| Shrimp         | 2.02 | 2.07 | 2.40 | 2.53 | 2.91 | 3.07 | 2.50 | 2.59 | 3.02 | 2.93 |
| Snappers       | 2.92 | 2.95 | 3.03 | 3.14 | 3.34 | 3.52 | 3.50 | 3.79 | 3.66 | 3.77 |
| Swordfish      | 2.43 | 3.16 | 3.98 | 3.43 | 3.79 | 3.54 | 3.36 | 3.38 | 3.45 | 3.05 |
| Tilefish       | 2.33 | 2.54 | 1.84 | 2.87 | 2.53 | 2.76 | 3.15 | NA   | 4.08 | 3.92 |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of South Carolina Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 610    | 54,370    | 18,056  | 31,285      |
|                              | Private Boat | 1,032  | 79,903    | 24,495  | 52,039      |
|                              | Shore        | 6,129  | 558,935   | 187,469 | 353,834     |
| Total Durable Expenditures   |              | 3,239  | 348,735   | 128,764 | 205,552     |
| Total State Economic Impacts |              | 11,010 | 1,041,944 | 358,784 | 642,710     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 35,009            | Fishing Tackle             | 93,074                     |
| Private Boat                                    | 85,654            | Other Equipment            | 40,903                     |
| Shore   | 428,878           | Boat Expenses              | 178,077                    |
| Total   | 549,541           | Vehicle Expenses           | 23,268                     |
|   |                   | Second Home Expenses       | 0                          |
|   |                   | Total Durable Expenditures | 335,322                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 884,863                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|-------|------|------|------|
| Coastal       | 231  | 210  | 148  | 207  | 166  | 181  | 192   | 163  | 184  | 176  |
| Non-Coastal   | 112  | 104  | 66   | 123  | 84   | 114  | 157   | 102  | 93   | 116  |
| Out-of-State  | 554  | 494  | 264  | 406  | 602  | 569  | 684   | 510  | 437  | 569  |
| Total Anglers | 898  | 809  | 478  | 736  | 852  | 864  | 1,033 | 775  | 714  | 861  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 72    | 72    | 75    | 24    | 48    | 95    | 97    | 78    | 88    | 131   |
| Private     | 2,205 | 2,265 | 2,170 | 2,223 | 2,187 | 2,276 | 2,371 | 2,624 | 3,136 | 2,279 |
| Shore       | 5,280 | 5,691 | 6,262 | 5,865 | 7,515 | 6,375 | 6,494 | 6,634 | 6,165 | 7,487 |
| Total Trips | 7,558 | 8,028 | 8,507 | 8,111 | 9,751 | 8,746 | 8,962 | 9,335 | 9,389 | 9,897 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|   |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Black sea bass                                | H | 38    | 531   | 104   | 127   | 53    | 249   | 88    | 56    | 197   | 63    |
|   | R | 913   | 1,238 | 2,366 | 1,212 | 1,022 | 4,286 | 2,079 | 2,282 | 3,266 | 1,362 |
| Bluefish                                      | H | 461   | 1,115 | 1,439 | 924   | 2,106 | 820   | 921   | 1,123 | 752   | 765   |
|   | R | 621   | 1,160 | 2,911 | 615   | 1,914 | 1,470 | 2,597 | 1,583 | 3,105 | 1,530 |
| Drum (Atlantic croaker and spot) <sup>3</sup> | H | 3,560 | 2,610 | 4,124 | 5,135 | 5,041 | 1,859 | 8,094 | 5,243 | 2,663 | 1,232 |
|   | R | 2,341 | 1,199 | 2,477 | 1,744 | 9,645 | 6,651 | 6,055 | 8,655 | 5,125 | 5,884 |
| Drum (Southern kingfish)                      | H | 2,952 | 1,093 | 1,731 | 2,774 | 3,639 | 2,207 | 1,368 | 1,450 | 1,783 | 923   |
|   | R | 2,870 | 0     | 458   | 712   | 0     | 22    | 11    | 45    | 3     | 4     |
| Drum (spotted seatrout)                       | H | 370   | 407   | 193   | 622   | 441   | 260   | 311   | 311   | 648   | 257   |
|   | R | 1,002 | 1,167 | 744   | 1,762 | 2,191 | 1,407 | 1,148 | 1,791 | 1,950 | 1,063 |
| Porgies (sheepshead)                          | H | 454   | 187   | 458   | 128   | 66    | 169   | 141   | 136   | 204   | 118   |
|   | R | 61    | 121   | 203   | 163   | 315   | 421   | 368   | 391   | 436   | 421   |
| Red drum                                      | H | 191   | 437   | 373   | 296   | 283   | 393   | 258   | 241   | 456   | 263   |
|   | R | 1,676 | 2,269 | 1,618 | 1,083 | 1,865 | 1,875 | 1,433 | 1,267 | 2,094 | 1,494 |
| Sharks <sup>4</sup>                           | H | 27    | 11    | 26    | 22    | 57    | 33    | 13    | 19    | 11    | 6     |
|   | R | 3,675 | 2,196 | 1,714 | 2,489 | 4,477 | 2,571 | 2,921 | 1,694 | 1,429 | 1,867 |
| Southern flounder                             | H | 242   | 309   | 323   | 258   | 191   | 140   | 184   | 187   | 221   | 114   |
|   | R | 454   | 25    | 63    | 120   | 0     | 0     | 0     | < 1   | 0     | < 1   |
| Spanish mackerel                              | H | 137   | 171   | 472   | 258   | 101   | 194   | 390   | 306   | 46    | 289   |
|   | R | 84    | 139   | 389   | 313   | 130   | 137   | 322   | 334   | 300   | 322   |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> Drum (Atlantic croaker and spot) include spot and Atlantic croaker.

<sup>4</sup> Sharks include unidentified (sharks), shark species, unidentified sharks, requiem shark family, requiem shark, Atlantic sharpnose shark, requiem shark genus, and blacktip shark.

## 2017 South Carolina State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 351,453 (1.4%)      | 109,238 (1.4%)  | 1,866,451 (1.5%) | 76.7 (1.1%)                  | 121 (1.2%)                          | 222                               | 0.11  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 21    | 23    | 32    | 35    | 30    | 28    | 26    | 31    | 30    |
|                                   | Receipts | 1,794 | 1,386 | 1,326 | 1,868 | 1,657 | 2,690 | 2,438 | 3,782 | 4,136 |
| Seafood sales, retail             | Firms    | 77    | 78    | 87    | 67    | 67    | 73    | 69    | 57    | 72    |
|                                   | Receipts | 4,709 | 3,978 | 5,535 | 4,818 | 3,765 | 4,845 | 6,007 | 5,753 | 5,869 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|                                   |                | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Establishments | 2     | 2     | 1     | NA    | NA    | 4     | 2     | 1     | NA    |
|                                   | Employees      | ds    | ds    | ds    | NA    | NA    | ds    | ds    | 0     | NA    |
|                                   | Payroll        | ds    | ds    | ds    | NA    | NA    | ds    | ds    | 0     | NA    |
| Seafood sales, wholesale          | Establishments | 15    | 16    | 12    | 15    | 16    | 12    | 16    | 15    | 14    |
|                                   | Employees      | 111   | 120   | 101   | 125   | 134   | 148   | 146   | 151   | 157   |
|                                   | Payroll        | 3,676 | 3,868 | 3,760 | 4,506 | 4,849 | 5,329 | 5,327 | 5,193 | 4,840 |
| Seafood sales, retail             | Establishments | 57    | 56    | 61    | 60    | 56    | 56    | 54    | 58    | 48    |
|                                   | Employees      | 261   | 260   | 245   | 228   | 222   | 224   | 185   | 200   | 163   |
|                                   | Payroll        | 4,901 | 4,580 | 4,231 | 3,670 | 3,713 | 3,633 | 3,883 | 4,006 | 3,186 |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015    | 2016    | 2017    |
|--|----------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 41     | 39     | 41     | 39     | 37     | 37     | 34      | 34      | 32      |
|  | Employees      | 1,929  | 1,922  | 1,943  | 1,980  | 2,262  | 2,225  | 2,690   | 2,789   | 3,031   |
|  | Payroll        | 73,988 | 74,945 | 85,568 | 90,942 | 96,081 | 98,324 | 115,262 | 125,487 | 141,999 |
| Deep Sea Freight Transportation                | Establishments | 8      | 7      | 6      | 6      | 4      | 1      | 1       | 1       | NA      |
|  | Employees      | ds     | 20     | ds     | ds     | 21     | ds     | ds      | 0       | NA      |
|  | Payroll        | ds     | 758    | 722    | ds     | 633    | ds     | ds      | 0       | NA      |
| Deep Sea Passenger Transportation              | Establishments | 6      | 2      | 2      | 1      | NA     | NA     | NA      | 1       | NA      |
|  | Employees      | ds     | ds     | ds     | ds     | NA     | NA     | NA      | 0       | NA      |
|  | Payroll        | ds     | ds     | ds     | ds     | NA     | NA     | NA      | 0       | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 4      | 4      | 4      | 5      | 5      | 5      | 4       | 5       | 7       |
|  | Employees      | ds     | ds     | ds     | 40     | ds     | ds     | ds      | 33      | 44      |
|  | Payroll        | ds     | ds     | ds     | 2,625  | ds     | ds     | ds      | 1,899   | 2,777   |
| Port and Harbor Operations                     | Establishments | 2      | 2      | 5      | 7      | 2      | 3      | 4       | 4       | 3       |
|  | Employees      | ds     | ds     | ds     | 676    | ds     | ds     | ds      | 0       | 0       |
|  | Payroll        | ds     | ds     | ds     | 29,332 | ds     | ds     | ds      | 0       | 0       |
| Marine Cargo Handling                          | Establishments | 14     | 12     | 14     | 10     | 13     | 14     | 15      | 14      | 10      |
|  | Employees      | 1,953  | 1,731  | 1,717  | 715    | ds     | 1,902  | 2,467   | 2,117   | 1,614   |
|  | Payroll        | 43,170 | 39,625 | 49,172 | 30,381 | ds     | 66,803 | 59,595  | 75,187  | 79,262  |
| Navigational Services to Shipping              | Establishments | 8      | 7      | 8      | 10     | 8      | 9      | 9       | 9       | 10      |
|  | Employees      | 208    | 222    | 217    | 247    | 221    | 219    | 236     | 255     | 320     |
|  | Payroll        | 12,522 | 12,591 | 11,922 | 16,625 | 13,820 | 14,513 | 16,311  | 18,135  | 21,257  |
| Marinas  | Establishments | 69     | 73     | 75     | 70     | 77     | 70     | 70      | 74      | 67      |
|  | Employees      | 533    | 537    | 543    | 595    | 650    | 661    | 633     | 717     | 684     |
|  | Payroll        | 12,642 | 13,786 | 15,805 | 15,408 | 16,147 | 17,212 | 16,996  | 19,201  | 18,948  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.



# Gulf of Mexico Region

- Alabama
- West Florida
- Louisiana
- Mississippi
- Texas



Shrimp trawlers in Bayou La Batre, Alabama.  
Photo: NOAA Fisheries/Noelle Olsen



## MANAGEMENT CONTEXT

The Gulf of Mexico Region includes Alabama, Louisiana, Mississippi, Texas and West Florida. Federal fisheries in this region are managed by the Gulf of Mexico Fishery Management Council (GMFMC) and NOAA Fisheries under seven fishery management plans (FMPs). The coastal migratory pelagic resources and spiny lobster fisheries are managed jointly with the South Atlantic Fishery Management Council (SAFMC).

### FMPs in the Gulf of Mexico Region

- Aquaculture
- Coastal migratory pelagic resources (with SAFMC)
- Corals
- Red drum
- Reef fish
- Shrimp
- Spiny lobster (with SAFMC)

Only one of the stocks/stock complexes covered in these FMPs — greater amberjack — was listed as overfished in 2018.

Two stocks/complexes, gray snapper and lane snapper, were subject to overfishing. In 2018, greater amberjack (Gulf of Mexico stock) and gray triggerfish (Gulf of Mexico stock) were removed from the overfishing lists, and gray snapper (Gulf of Mexico stock) and lane snapper (Gulf of Mexico stock) were added to the overfishing lists.

## Catch Share Programs

Two catch share programs have been implemented in the Gulf of Mexico: 1) the Red Snapper Individual Fishing Quota (IFQ) Program; and 2) the Grouper and Tilefish IFQ Program. The landings revenues for these programs totaled more than \$54 million (in inflation-adjusted 2018 dollars) in 2017. The following are descriptions of these catch share programs and their performance.

**Red Snapper IFQ Program:** This program was implemented in 2007 to reduce overcapacity and mitigate derby fishing conditions in the red snapper segment of the commercial reef fish fishery. The 2017 key performance indicators of the program show that relative to the baseline period (the three-year period prior to implementation), the number of active vessels decreased, while quota, landings, inflation-adjusted landings revenue, and inflation-adjusted revenue per active vessel increased.

**Grouper and Tilefish IFQ Program:** This program was implemented in 2010 to reduce overcapacity, increase harvesting efficiency, and eliminate the race to fish in the grouper–tilefish segment of the commercial reef fish fishery. The 2017 key performance indicators of the program show that relative to the baseline period (the three-year period prior to implementation), landings, the number of active vessels, and inflation-adjusted landings revenue decreased, while quota and inflation-adjusted revenue per active vessel increased.

## COMMERCIAL FISHERIES — GULF OF MEXICO REGION

In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.

### Key Gulf of Mexico Region Commercial Species

- Blue crab
- Crawfish
- Groupers
- Menhaden
- Mullet
- Oysters
- Red snapper
- Shrimp
- Spiny lobster
- Tunas

## Economic Impacts

The premise behind economic impact modeling is that every dollar spent in a regional economy (direct impact) is either saved or re-spent on additional goods or services. If those dollars are re-spent on other goods and services in the regional economy, this spending generates additional economic activity in the region.<sup>1</sup>

Four different measures are commonly used to show how commercial fisheries landings affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as commercial fishing. The category includes both the direct sales of fish landed and sales made between businesses and households re-

<sup>1</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

sulting from the original sale. Income includes personal income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in numbers of jobs. Note that these categories are not additive. The United States seafood industry is defined here as the commercial fishing sector, seafood processors and dealers, seafood wholesalers and distributors, importers, and seafood retailers.<sup>2</sup>

This report provides estimates of total economic impacts for the nation and for each of the 23 coastal states. Total economic impacts for each state and the nation represent the sum of direct impacts; indirect impacts (in this case, the impact from suppliers to the seafood industry); and induced impacts (spending by employees on personal and household expenditures, where employees of both the seafood industry and its full supply chain are included). That is, the total economic impact estimates reported here measure jobs, sales, value-added, and income impacts from the seafood industry as well as the economic activity generated throughout each region's broader economy from this industry.

In 2018, the commercial fishing and seafood industry in Florida generated the largest employment impacts in the Gulf of Mexico region with 82,094 full- and part-time jobs. Florida also generated the largest sales impacts (\$19.2 billion), value-added impacts (\$6.4 billion), and income impacts (\$3.6 billion).

## Landings Revenue

In 2018, landings revenue in the Gulf of Mexico Region totaled \$890.3 million, a 40% increase from 2009 (a 21% increase in real terms after adjusting for inflation) and a 2% increase from 2017. Landings revenue was highest in Louisiana (\$375.9 million), followed by Texas (\$211.8 million).

Shellfish landings revenue accounted for 75% of all

landings revenue. In 2018, shrimp (\$398.4 million), menhaden (\$116.5 million), and oysters (\$104.1 million) had the highest landings revenue in this region. Together, these top three species accounted for 70% of total landings revenue.

From 2009 to 2018, red snapper (273%, 221% in real terms), spiny lobster (258%, 208% in real terms), and menhaden (68%, 45% in real terms) had the largest increases, while tunas (-55%, -61% in real terms), crawfish (-18%, -30% in real terms), and mullets (-4%, -18% in real terms) had the largest decreases. From 2017 to 2018, menhaden (61%), spiny lobster (37%), and blue crab (10%) had the largest increases, while tunas (-28%), mullets (-12%), and groupers (-12%) had the largest decreases.

### Commercial Revenue: Largest Increases

*From 2009:*

- Red snapper (273%, 221% in real terms)
- Spiny lobster (258%, 208% in real terms)
- Menhaden (68%, 45% in real terms)

*From 2017:*

- Menhaden (61%)
- Spiny lobster (37%)
- Blue crab (10%)

### Commercial Revenue: Largest Decreases

*From 2009:*

- Tunas (-55%, -61% in real terms)
- Crawfish (-18%, -30% in real terms)
- Mulletts (-4%, -18% in real terms)

*From 2017:*

- Tunas (-28%)
- Mulletts (-12%)
- Groupers (-12%)

## Landings

In 2018, commercial fisheries landings by South Atlantic Region commercial fishermen totaled 105.0 million pounds. This represents a 3% decrease from 2009 and a 10% increase from 2017. Menhaden contributed the highest landings volume in the region, accounting for 76% of total landing weight.

<sup>2</sup> The NMFS Commercial Fishing Industry Input/Output Model was used to generate the impact estimates. [Available at: [https://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](https://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf).]

<sup>3</sup> Commercial economic impacts data were not available for West Florida specifically; data for the entire state of Florida are reported here.

From 2009 to 2018, red snapper (176%) and spiny lobster (47%) had the largest increases, while menhaden landings were flat for this period. Tunas (-66%), crawfish (-41%), and groupers (-33%) experienced the largest decline in landings from 2009 to 2018. From 2017 to 2018, spiny lobster (61%), crawfish (30%), and menhaden (15%) had the largest increases, while tunas (-36%), groupers (-20%), and oysters (-13%) had the largest decreases.

#### Commercial Landings: Largest Increases

*From 2009:*

- Red snapper (176%)
- Spiny lobster (47%)

*From 2017:*

- Spiny lobster (61%)
- Crawfish (30%)
- Menhaden (15%)

#### Commercial Landings: Largest Decreases

*From 2009:*

- Tunas (-66%)
- Crawfish (-41%)
- Groupers (-33%)

*From 2017:*

- Tunas (-36%)
- Groupers (-20%)
- Oysters (-13%)

## Prices

In 2018, spiny lobster (\$7.49 per pound) received the highest ex-vessel price in the region. Landings of menhaden (\$0.1 per pound) had the lowest ex-vessel price. From 2009 to 2018, spiny lobster (143%, 109% in real terms), oysters (111%, 82% in real terms), and blue crab (95%, 68% in real terms) had the largest increases; no species experienced a price decline for this period. From 2017 to 2018, menhaden (41%), blue crab (13%), and tunas (12%) had the largest increases, while crawfish (-20%), spiny lobster (-15%), and shrimp (-8%) had the largest decreases.

## RECREATIONAL FISHERIES — GULF OF MEXICO REGION

In this report, recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. This recreational fisheries section reports on economic impacts and expenditures, angler participation, fishing trips, and catch of key species/species groups.<sup>4</sup>

#### Key Gulf of Mexico Region Recreational Species<sup>5</sup>

- |                                     |                        |
|-------------------------------------|------------------------|
| • Drum (Atlantic croaker)           | • Porgies (sheepshead) |
| • Drum (Gulf and Southern kingfish) | • Red drum             |
| • Drum (sand and silver seatrouts)  | • Red snapper          |
| • Drum (spotted seatrout)           | • Southern flounder    |
|                                     | • Spanish mackerel     |
|                                     | • Striped mullet       |

## Economic Impacts and Expenditures

The economic contribution of recreational fishing activities in the Gulf of Mexico Region is based on spending by recreational anglers.<sup>6</sup> Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusting by the CPI (consumer price index) to the current year. Total annual durable expenditures are estimated by multiplying mean durable expenditures in each state by the estimated annual number of adult participants for each state and adjusting by the CPI (consumer price index) to the current year.<sup>7</sup>

Four different measures are commonly used to show how angler expenditures affect the economy in a region (state or nationwide): sales, income, value-added, and employment. The term sales refers to the gross value of all sales by regional businesses affected by an activity, such as recreational fishing. The category includes both the direct sales made by the angler and sales made between businesses and households resulting from that original sale by the angler. Income includes personal

<sup>4</sup> Atlantic and Gulf recreational catch and effort estimates are based upon the MRIP estimates released in 2018. Louisiana harvest and release totals for 2014-2018 are estimated using data from a state creel survey.

<sup>5</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>6</sup> Trip expenditure estimates were generated from the 2016/2017 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2020). Durable goods expenditures were generated from the 2014 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2016). [For citations: Publications-Recreational Fisheries Economics Research.]

<sup>7</sup> Summary data is available online in the FEUS webtool. [Available at: <https://www.fisheries.noaa.gov/data-tools/fisheries-economics-united-states-interactive-tool>.]

income (wages and salaries) and proprietors' income (income from self-employment). Value-added is the contribution made to the gross domestic product in a region. Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers. The first three measures are calculated in terms of dollars, whereas employment impacts are measured in number of jobs. Note that these categories are not additive. NOAA Fisheries uses a regional impact modeling software, called IMPLAN, to estimate these four types of impacts.

The economic contributions for both trip and durable expenditures from recreational fishing in 2018 were estimated using IMPLAN version 3, with base year data from 2017. Models for each state and for the nation were created in IMPLAN using trip expenditures (based on 2016/2017 survey data on average trip expenditures and total 2018 trips) and for durable expenditures (based on 2014 survey data on average durable expenditures and 2018 participants).

The greatest employment impacts from expenditures on saltwater recreational fishing in the Gulf of Mexico Region were generated in West Florida (71,419 jobs), followed by Alabama (20,465 jobs) and Louisiana (16,819 jobs). The largest sales impacts were observed in West Florida (\$8.3 billion), followed by Alabama (\$1.9 billion) and Louisiana (\$1.9 billion). The biggest income impacts were generated in West Florida (\$3 billion), followed by Alabama (\$714.1 million) and Texas (\$681.2 million). The greatest value-added impacts were in West Florida (\$5.1 billion), followed by Alabama (\$1.3 billion) and Louisiana (\$1.2 billion).

Expenditures for fishing trips and durable equipment across the Gulf of Mexico Region in 2018 totaled \$12.8 billion. This total included \$9.4 billion in durable goods expenditures, with the largest portion coming from boat expenses (\$5.3 billion).

## Participation

In 2018, there were 1.8 million recreational anglers who fished in the Gulf of Mexico Region. This number represented a 37% decrease from 2009 and a 31% decrease

from 2017. The anglers are categorized as either residents from coastal (87%) or non-coastal (13%) counties.

## Fishing Trips

In 2018, recreational fishermen took 55.8 million fishing trips in the Gulf of Mexico Region. Texas trip estimates are not available for the shore mode. Shore mode in Louisiana has been included in the private mode since 2014. This number represented a 4% decrease from 2009 and a 5% decrease from 2017. The largest proportions of trips were taken in the shore mode (55%) and private boat (43%). States with the highest number of recorded trips in the Gulf of Mexico Region were West Florida (41 million trips) and Alabama (6.7 million trips).

## Harvest and Release Trends

Of the Gulf of Mexico Region's key species and species groups, drum (spotted seatrout) (28.9 million fish), drum (Atlantic croaker) (15.5 million fish), and red drum (11.8 million fish), were most frequently caught by recreational fishermen. The text box below shows the species with the largest percentage increases and decreases in the past 10 years and in the past year.

From 2009 to 2018, striped mullet (186%), Spanish mackerel (49%), and red snapper (36%) had the largest increases, while southern flounder (-74%) and drum (sand and silver seatrouts) (-44%) had the largest decreases. From 2017 to 2018, striped mullet (50%) and Southern flounder (41%) had the largest increases, while drum (sand and silver seatrouts) (-44%), red snapper (-31%), and Spanish mackerel (-24%) had the largest decreases.

**Harvest and Release: Largest Increases***From 2009:*

- Striped mullet (186%)
- Spanish mackerel (49%)
- Red snapper (36%)

*From 2017:*

- Striped mullet (50%)
- Southern flounder (41%)

**Harvest and Release: Largest Decreases***From 2009:*

- Southern flounder (-74%)
- Drum (sand and silver seatrouts) (-44%)

*From 2017:*

- Drum (sand and silver seatrouts) (-44%)
- Red snapper (-31%)
- Spanish mackerel (-24%)

**MARINE ECONOMY — GULF OF MEXICO REGION**

For this report, the marine economy refers to the fishing and marine-related industries in a coastal state. The state marine economy consists of two industry sectors: 1) seafood sales and processing (employer establishments and non-employer firms); and 2) transportation support and marine operations (employer establishments). These sectors include several different marine-related industries.<sup>8</sup>

Note that when discussing the marine economy in the Gulf of Mexico Region, all statistics include the entire state of Florida and not just West Florida.<sup>9</sup>

To measure the size of the commercial fishing sector in a state's economy relative to the size of the commercial fishing sector in the national economy, researchers use an index called the Commercial Fishing Location Quotient (CFLQ).<sup>10</sup> The CFLQ is calculated as the ratio of the percentage of regional employment in the commercial fishing sector relative to the percentage of national employment in the commercial fishing sector. The U.S. CFLQ is 1. If a state CFLQ is less than 1, then less commercial

fishing occurs in this state than the national average. If a state CFLQ is greater than 1, then more commercial fishing occurs in this state than the national average.

Louisiana had the highest CFLQ at 3.71 in 2017. Mississippi had a CFLQ value of 0.99.

In 2017, 1.4 million employer establishments operated throughout the entire Gulf of Mexico Region (including marine and non-marine related establishments). These establishments employed 23.3 million workers and had a total annual payroll of \$1.1 trillion. The combined gross state product of Alabama, Florida, Louisiana, Mississippi, and Texas was approximately \$3.3 trillion in 2017.<sup>11</sup>

**Seafood Sales and Processing**

**Seafood Product Preparation and Packaging:** In 2017, the Gulf of Mexico Region had 598 non-employer firms in the seafood product preparation and packaging sector (a 41% increase from 2009). Annual receipts for these firms totaled \$46.1 million. There were 133 employer firms in this sector (a 3% increase from 2009). These establishments employed 8,038 workers (a 9% increase from 2009) and had a total annual payroll of \$270.3 million. The greatest number of employer and non-employer establishments in this sector was in Florida (303), followed by Texas (166) and Louisiana (160).

**Seafood Sales, Retail:** In 2017, there were 766 non-employer firms in seafood retail sales in the states that make up the Gulf of Mexico Region (a 5% decrease from 2009). Annual receipts for these firms totaled \$66.9 million. There were 370 employer firms in the seafood retail sector (a 3% increase from 2009). These establishments employed 2,452 workers (a 26% increase from 2009) and had a total annual payroll of \$53.8 million. The greatest number of employer and non-employer establishments in this sector was in Florida (492), followed by Louisiana (267) and Texas (226).

**Seafood Sales, Wholesale:** There were 454 employer firms in the seafood wholesale sector in the Gulf of Mexico Region in 2017 (a 5% increase from 2009). These establishments employed 4,136 workers (a 15%

<sup>8</sup> Unless otherwise stated, data are from the U.S. Census Bureau (<https://www.census.gov>).

<sup>9</sup> Marine economy information was not available for East Florida, information for the entire state of Florida is provided in this report.

<sup>10</sup> U.S. Bureau of Labor Statistics, 'Location Quotient Calculator.' [For more information: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm>.]

<sup>11</sup> U.S. Bureau of Economic Analysis. Gross Domestic Product by State, Fourth Quarter and Annual 2017. [Available at <https://apps.bea.gov/regional/histdata/releases/0518gdpstate/>.]

increase from 2009) and had a total annual payroll of \$157.7 million. The greatest number of employer and non-employer establishments in this sector was in Florida (230), followed by Louisiana (114) and Texas (81).

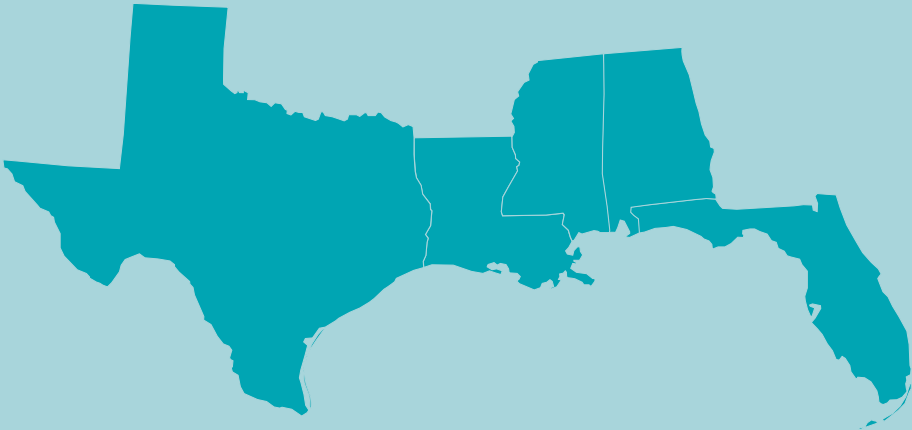
## Transportation Support and Marine Operations

Data for the transportation support and marine operations sectors of the Gulf of Mexico Region's economy were largely suppressed for confidentiality reasons. It is clear, however, that these sectors play an important role in the regional economy. For example, in 2017, the ship and boat building sector in the Gulf of Mexico Region accounted for \$2.8 billion in payroll.





# Tables | Gulf of Mexico Region



## Gulf of Mexico Region | Commercial Fisheries

## 2018 Economic Impacts of the Gulf of Mexico Seafood Industry (millions of dollars)

|                      | Landings Revenue | #Jobs  | With Imports |        |             | #Jobs  | Without Imports |        |             |
|----------------------|------------------|--------|--------------|--------|-------------|--------|-----------------|--------|-------------|
|                      |                  |        | Sales        | Income | Value Added |        | Sales           | Income | Value Added |
| Alabama              | 688              | 12,236 | 610          | 237    | 312         | 11,869 | 559             | 224    | 293         |
| Florida <sup>1</sup> | 248              | 82,094 | 19,200       | 3,591  | 6,422       | 9,847  | 1,006           | 265    | 406         |
| Louisiana            | 376              | 33,217 | 2,040        | 750    | 1,020       | 32,027 | 1,786           | 699    | 934         |
| Mississippi          | 44               | 6,100  | 317          | 125    | 162         | 6,043  | 308             | 123    | 158         |
| Texas                | 212              | 39,806 | 5,393        | 1,318  | 2,084       | 16,973 | 1,176           | 431    | 602         |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014      | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|
| Total              | 635,887 | 604,174 | 803,759 | 780,471 | 929,975 | 1,056,597 | 853,226 | 888,755 | 872,774 | 890,279 |
| Finfish            | 150,646 | 130,571 | 195,092 | 191,347 | 201,556 | 207,707   | 247,363 | 259,446 | 182,034 | 220,220 |
| Shellfish          | 483,625 | 472,504 | 607,400 | 587,599 | 726,639 | 846,543   | 604,324 | 627,067 | 688,571 | 668,349 |
| Other              | 1,616   | 1,099   | 1,267   | 1,525   | 1,780   | 2,348     | 1,540   | 2,241   | 2,168   | 1,710   |
| <b>Key Species</b> |         |         |         |         |         |           |         |         |         |         |
| Blue crab          | 46,016  | 41,030  | 48,943  | 52,538  | 62,042  | 79,679    | 74,567  | 65,569  | 69,146  | 76,392  |
| Crawfish           | 15,387  | 14,014  | 9,887   | 8,291   | 16,457  | 16,144    | 6,852   | 12,373  | 12,105  | 12,550  |
| Groupers           | 18,414  | 14,260  | 19,932  | 24,672  | 24,910  | 30,435    | 27,693  | 28,746  | 22,287  | 19,692  |
| Menhaden           | 69,456  | 66,020  | 103,523 | 87,377  | 90,706  | 93,267    | 138,628 | 143,342 | 72,202  | 116,530 |
| Mullet             | 6,147   | 5,222   | 10,395  | 8,753   | 13,552  | 11,715    | 7,654   | 8,560   | 6,668   | 5,879   |
| Oysters            | 66,656  | 54,878  | 64,908  | 76,025  | 75,552  | 90,240    | 96,093  | 86,217  | 110,900 | 104,074 |
| Red snapper        | 7,693   | 9,837   | 11,109  | 13,319  | 20,253  | 22,527    | 26,792  | 25,843  | 28,374  | 28,675  |
| Shrimp             | 322,526 | 304,468 | 421,762 | 401,797 | 497,398 | 577,479   | 345,593 | 390,430 | 434,005 | 398,359 |
| Spiny lobster      | 12,201  | 32,702  | 35,568  | 22,249  | 47,116  | 53,416    | 44,059  | 41,311  | 31,944  | 43,629  |
| Tunas              | 8,170   | 2,685   | 5,518   | 10,726  | 7,345   | 5,153     | 4,585   | 5,699   | 5,153   | 3,711   |

Total Landings and Landings of Key Species/Species Groups (thousands of pounds)<sup>1</sup>

|                    | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total              | 1,597,407 | 1,275,888 | 1,761,956 | 1,667,796 | 1,351,473 | 1,241,971 | 1,548,537 | 1,735,469 | 1,401,446 | 1,542,885 |
| Finfish            | 1,233,677 | 1,022,417 | 1,444,885 | 1,352,588 | 1,042,312 | 922,013   | 1,254,444 | 1,435,356 | 1,084,020 | 1,227,584 |
| Shellfish          | 361,959   | 251,820   | 315,384   | 312,771   | 307,039   | 311,919   | 292,040   | 297,890   | 315,461   | 314,250   |
| Other              | 1,771     | 1,651     | 1,687     | 2,438     | 2,122     | 8,039     | 2,053     | 2,224     | 1,965     | 1,051     |
| <b>Key Species</b> |           |           |           |           |           |           |           |           |           |           |
| Blue crab          | 62,359    | 41,078    | 55,688    | 53,747    | 47,119    | 51,643    | 52,623    | 51,991    | 54,468    | 53,191    |
| Crawfish           | 19,009    | 14,609    | 9,582     | 6,834     | 19,641    | 13,055    | 5,461     | 13,573    | 8,575     | 11,178    |
| Groupers           | 6,995     | 5,071     | 7,026     | 8,329     | 7,701     | 8,991     | 7,824     | 7,951     | 5,871     | 4,679     |
| Menhaden           | 1,165,948 | 967,025   | 1,374,285 | 1,275,789 | 971,306   | 848,599   | 1,188,941 | 1,364,034 | 1,016,831 | 1,166,097 |
| Mullet             | 11,320    | 8,958     | 14,256    | 12,210    | 13,899    | 15,163    | 10,858    | 11,430    | 9,317     | 8,237     |
| Oysters            | 20,752    | 16,302    | 19,092    | 21,200    | 19,526    | 17,513    | 16,633    | 15,272    | 17,705    | 15,329    |
| Red snapper        | 2,421     | 3,158     | 3,482     | 3,942     | 5,198     | 5,548     | 6,559     | 6,284     | 6,903     | 6,692     |
| Shrimp             | 247,267   | 165,813   | 216,852   | 217,589   | 204,215   | 217,012   | 203,612   | 204,478   | 223,240   | 221,546   |
| Spiny lobster      | 3,959     | 5,278     | 5,295     | 3,770     | 5,645     | 5,039     | 5,451     | 5,016     | 3,622     | 5,821     |
| Tunas              | 2,830     | 1,322     | 1,590     | 3,084     | 2,113     | 1,717     | 1,342     | 1,633     | 1,509     | 973       |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014  | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|-------|------|------|------|------|
| Blue crab     | 0.74 | 1.00 | 0.88 | 0.98 | 1.32 | 1.54  | 1.42 | 1.26 | 1.27 | 1.44 |
| Crawfish      | 0.81 | 0.96 | 1.03 | 1.21 | 0.84 | 1.24  | 1.25 | 0.91 | 1.41 | 1.12 |
| Groupers      | 2.63 | 2.81 | 2.84 | 2.96 | 3.23 | 3.39  | 3.54 | 3.62 | 3.80 | 4.21 |
| Menhaden      | 0.06 | 0.07 | 0.08 | 0.07 | 0.09 | 0.11  | 0.12 | 0.11 | 0.07 | 0.10 |
| Mullet        | 0.54 | 0.58 | 0.73 | 0.72 | 0.98 | 0.77  | 0.70 | 0.75 | 0.72 | 0.71 |
| Oysters       | 3.21 | 3.37 | 3.40 | 3.59 | 3.87 | 5.15  | 5.78 | 5.65 | 6.26 | 6.79 |
| Red snapper   | 3.18 | 3.11 | 3.19 | 3.38 | 3.90 | 4.06  | 4.08 | 4.11 | 4.11 | 4.29 |
| Shrimp        | 1.30 | 1.84 | 1.94 | 1.85 | 2.44 | 2.66  | 1.70 | 1.91 | 1.94 | 1.80 |
| Spiny lobster | 3.08 | 6.20 | 6.72 | 5.90 | 8.35 | 10.60 | 8.08 | 8.24 | 8.82 | 7.49 |
| Tunas         | 2.89 | 2.03 | 3.47 | 3.48 | 3.48 | 3.00  | 3.42 | 3.49 | 3.41 | 3.81 |

<sup>1</sup> Landings revenue is for West Florida. The rest of the information in this row is for the entire state of Florida.

**2018 Economic Impacts of the Gulf of Mexico Recreational Fishing Expenditures (thousands of dollars, trips)**

|              | Trips  | #Jobs  | Sales     | Income    | Value Added |
|--------------|--------|--------|-----------|-----------|-------------|
| Alabama      | 6,681  | 20,465 | 1,947,161 | 714,116   | 1,274,497   |
| Louisiana    | 2,276  | 16,819 | 1,928,798 | 635,051   | 1,153,922   |
| Mississippi  | 4,555  | 5,955  | 601,744   | 204,012   | 375,147     |
| Texas        | 1,247  | 14,226 | 1,829,883 | 681,174   | 1,146,709   |
| West Florida | 40,996 | 71,419 | 8,347,067 | 2,980,591 | 5,063,201   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 538,020           | Fishing Tackle             | 2,085,690                  |
| Private Boat                                    | 1,450,918         | Other Equipment            | 908,243                    |
| Shore   | 1,417,499         | Boat Expenses              | 5,316,984                  |
| Total   | 3,406,438         | Vehicle Expenses           | 980,170                    |
|   |                   | Second Home Expenses       | 139,302                    |
|   |                   | Total Durable Expenditures | 9,430,387                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 12,836,825                 |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Coastal       | 2,550 | 2,480 | 2,737 | 2,803 | 2,973 | 2,674 | 2,437 | 2,445 | 2,316 | 1,572 |
| Non-Coastal   | 296   | 235   | 311   | 268   | 400   | 185   | 199   | 259   | 296   | 234   |
| Total Anglers | 2,846 | 2,715 | 3,048 | 3,071 | 3,373 | 2,859 | 2,635 | 2,704 | 2,612 | 1,806 |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| For-Hire    | 932    | 730    | 907    | 1,121  | 1,054  | 1,065  | 1,214  | 1,274  | 1,252  | 1,431  |
| Private     | 30,390 | 31,433 | 31,484 | 33,726 | 31,787 | 25,410 | 23,585 | 24,714 | 25,254 | 23,717 |
| Shore       | 26,457 | 29,336 | 30,492 | 32,843 | 36,483 | 26,239 | 25,823 | 28,414 | 32,128 | 30,607 |
| Total Trips | 57,779 | 61,499 | 62,884 | 67,690 | 69,324 | 52,715 | 50,622 | 54,403 | 58,634 | 55,755 |

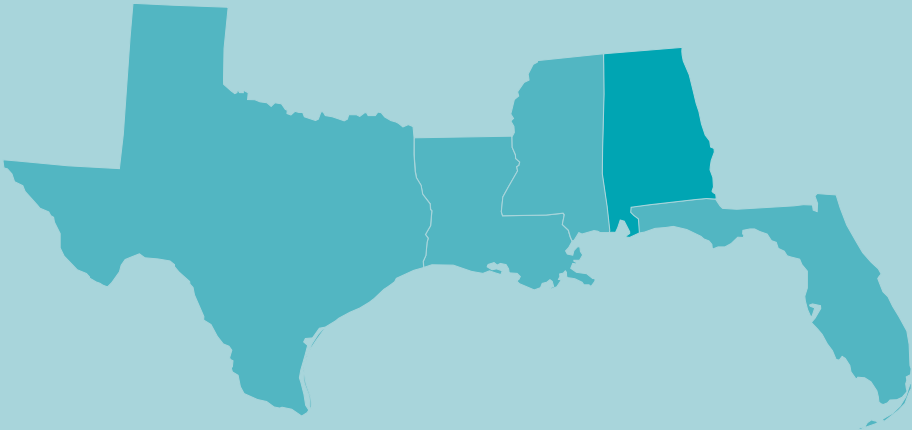
**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2</sup>**

|                                   |   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-----------------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Drum (Atlantic croaker)           | H | 3,870  | 3,819  | 4,765  | 3,096  | 4,646  | 6,229  | 3,533  | 2,362  | 3,552  | 4,010  |
|                                   | R | 10,115 | 10,456 | 13,084 | 8,842  | 7,303  | 5,307  | 5,857  | 5,372  | 11,053 | 11,481 |
| Drum (Gulf and Southern kingfish) | H | 2,566  | 4,893  | 2,250  | 3,378  | 4,071  | 1,655  | 2,556  | 4,254  | 3,924  | 3,661  |
|                                   | R | 1,851  | 1,921  | 1,300  | 1,492  | 1,208  | 1,120  | 703    | 1,936  | 2,134  | 1,269  |
| Drum (sand and silver seatrouts)  | H | 9,730  | 11,400 | 11,141 | 11,061 | 6,414  | 5,187  | 6,145  | 6,146  | 9,583  | 5,894  |
|                                   | R | 5,688  | 4,551  | 5,594  | 5,597  | 3,614  | 1,466  | 2,567  | 2,767  | 6,074  | 2,805  |
| Drum (spotted seatrout)           | H | 24,870 | 21,831 | 27,012 | 27,503 | 24,005 | 8,291  | 10,913 | 14,523 | 12,084 | 9,012  |
|                                   | R | 36,579 | 32,908 | 43,436 | 47,941 | 43,650 | 18,523 | 19,787 | 29,400 | 30,569 | 19,870 |
| Porgies (sheepshead)              | H | 3,910  | 3,966  | 6,109  | 4,834  | 3,259  | 2,717  | 2,688  | 2,266  | 4,754  | 2,626  |
|                                   | R | 3,234  | 5,718  | 4,029  | 3,921  | 5,081  | 3,683  | 3,848  | 2,320  | 4,159  | 5,265  |
| Red drum                          | H | 5,040  | 7,211  | 7,326  | 5,907  | 7,621  | 2,857  | 3,226  | 2,892  | 3,381  | 3,642  |
|                                   | R | 12,038 | 15,447 | 14,072 | 14,547 | 17,579 | 7,256  | 8,064  | 7,128  | 7,074  | 8,203  |
| Red snapper                       | H | 1,466  | 1,155  | 1,512  | 1,516  | 2,422  | 1,106  | 1,460  | 1,714  | 3,067  | 2,261  |
|                                   | R | 4,759  | 4,815  | 5,818  | 4,463  | 5,630  | 4,205  | 3,455  | 6,650  | 9,270  | 6,190  |
| Southern flounder                 | H | 1,831  | 1,842  | 1,878  | 1,509  | 2,339  | 677    | 586    | 714    | 395    | 336    |
|                                   | R | 575    | 617    | 541    | 659    | 639    | 214    | 337    | 203    | 56     | 298    |
| Spanish mackerel                  | H | 3,595  | 4,472  | 4,882  | 5,482  | 9,000  | 4,491  | 5,501  | 5,601  | 6,378  | 4,759  |
|                                   | R | 3,738  | 6,456  | 6,370  | 4,616  | 11,855 | 6,157  | 4,236  | 2,762  | 7,935  | 6,153  |
| Striped mullet                    | H | 1,943  | 4,128  | 4,397  | 6,239  | 7,848  | 6,216  | 7,001  | 5,630  | 4,575  | 6,124  |
|                                   | R | 543    | 300    | 666    | 536    | 557    | 1,416  | 382    | 1,195  | 147    | 976    |

<sup>1</sup> West Florida anglers estimates are not available for the non-coastal mode.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.



# Tables | Alabama





## Alabama | Commercial Fisheries

## 2018 Economic Impacts of the Alabama Seafood Industry (millions of dollars)

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 12,236       | 610   | 237    | 312         | 11,869          | 559   | 224    | 293         |
| Commercial Harvesters              | 1,975        | 112   | 33     | 49          | 1,975           | 112   | 33     | 49          |
| Seafood Processors & Dealers       | 2,175        | 161   | 63     | 80          | 1,933           | 143   | 56     | 71          |
| Importers                          | 99           | 32    | 5      | 10          | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 181          | 10    | 4      | 5           | 178             | 10    | 3      | 4           |
| Retail                             | 7,805        | 296   | 132    | 168         | 7,783           | 295   | 132    | 168         |

Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 36,972 | 26,283 | 49,995 | 44,942 | 50,777 | 62,843 | 43,165 | 50,820 | 56,222 | 67,670 |
| Finfish            | 3,479  | 2,626  | 3,933  | 4,917  | 4,519  | 4,393  | 4,064  | 4,454  | 4,001  | 4,534  |
| Shellfish          | 33,493 | 23,657 | 46,062 | 40,025 | 46,258 | 58,450 | 39,101 | 46,367 | 52,221 | 63,136 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 961    | 732    | 1,128  | 1,044  | 1,037  | 1,296  | 1,226  | 1,785  | 1,520  | 1,150  |
| King mackerel      | 140    | 93     | 207    | 220    | 439    | 416    | 344    | 281    | 121    | 143    |
| Menhaden           | 42     | 15     | 58     | 84     | 104    | 147    | 154    | 164    | 158    | 173    |
| Mulletts           | 771    | 594    | 695    | 1,266  | 1,181  | 1,123  | 761    | 522    | 537    | 591    |
| Oysters            | 77     | 389    | 1,322  | 1,255  | 786    | 433    | 341    | 601    | 557    | 914    |
| Red snapper        | 262    | 329    | 314    | 316    | 401    | 697    | 1,443  | 1,423  | 1,852  | 1,559  |
| Sharks             | 12     | NA     | 26     | 6      | 202    | 116    | NA     | 0      | 71     | 122    |
| Shrimp             | 32,454 | 22,534 | 43,608 | 37,720 | 44,427 | 56,712 | 37,533 | 43,973 | 50,138 | 61,038 |
| Spanish mackerel   | 301    | 499    | 582    | 1,149  | 940    | 471    | 705    | 833    | 439    | 670    |
| Vermilion snapper  | 841    | 384    | 622    | 393    | 88     | 385    | 247    | 242    | 267    | 277    |

## Total Landings and Landings of Key Species/Species Groups (thousands of pounds)

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 27,658 | 13,995 | 25,621 | 25,553 | 21,648 | 23,718 | 22,773 | 24,579 | 26,737 | 35,353 |
| Finfish            | 4,354  | 3,316  | 4,859  | 6,348  | 5,595  | 5,150  | 3,778  | 4,443  | 4,055  | 5,950  |
| Shellfish          | 23,304 | 10,680 | 20,762 | 19,205 | 16,054 | 18,569 | 18,994 | 20,136 | 22,683 | 29,403 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 1,459  | 927    | 1,617  | 1,325  | 1,027  | 1,161  | 1,301  | 1,918  | 1,425  | 1,034  |
| King mackerel      | 94     | 49     | 119    | 117    | 175    | 184    | 146    | 112    | 53     | 59     |
| Menhaden           | 190    | 81     | 364    | 521    | 496    | 700    | 695    | 804    | 1,052  | 1,713  |
| Mulletts           | 1,840  | 1,202  | 1,270  | 2,002  | 1,795  | 1,907  | 1,385  | 952    | 990    | 1,250  |
| Oysters            | 23     | 68     | 296    | 265    | 133    | 58     | 26     | 37     | 26     | 25     |
| Red snapper        | 65     | 83     | 78     | 78     | 108    | 180    | 356    | 320    | 410    | 360    |
| Sharks             | 32     | NA     | 75     | 18     | 312    | 193    | NA     | 2      | 153    | 201    |
| Shrimp             | 21,821 | 9,683  | 18,840 | 17,603 | 14,883 | 17,339 | 17,665 | 18,171 | 21,224 | 28,309 |
| Spanish mackerel   | 418    | 733    | 839    | 1,377  | 972    | 431    | 617    | 859    | 440    | 948    |
| Vermilion snapper  | 346    | 148    | 224    | 132    | 28     | 124    | 74     | 76     | 80     | 83     |

## Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)

|                   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016  | 2017  | 2018  |
|-------------------|------|------|------|------|------|------|-------|-------|-------|-------|
| Blue crab         | 0.66 | 0.79 | 0.70 | 0.79 | 1.01 | 1.12 | 0.94  | 0.93  | 1.07  | 1.11  |
| King mackerel     | 1.49 | 1.91 | 1.74 | 1.89 | 2.51 | 2.26 | 2.35  | 2.50  | 2.29  | 2.44  |
| Menhaden          | 0.22 | 0.18 | 0.16 | 0.16 | 0.21 | 0.21 | 0.22  | 0.20  | 0.15  | 0.10  |
| Mulletts          | 0.42 | 0.49 | 0.55 | 0.63 | 0.66 | 0.59 | 0.55  | 0.55  | 0.54  | 0.47  |
| Oysters           | 3.33 | 5.75 | 4.47 | 4.73 | 5.91 | 7.43 | 12.96 | 16.36 | 21.21 | 36.13 |
| Red snapper       | 4.04 | 3.97 | 4.04 | 4.05 | 3.70 | 3.86 | 4.05  | 4.45  | 4.52  | 4.33  |
| Sharks            | 0.39 | NA   | 0.35 | 0.33 | 0.65 | 0.60 | NA    | 0.11  | 0.46  | 0.61  |
| Shrimp            | 1.49 | 2.33 | 2.31 | 2.14 | 2.99 | 3.27 | 2.12  | 2.42  | 2.36  | 2.16  |
| Spanish mackerel  | 0.72 | 0.68 | 0.69 | 0.83 | 0.97 | 1.09 | 1.14  | 0.97  | 1.00  | 0.71  |
| Vermilion snapper | 2.43 | 2.59 | 2.78 | 2.97 | 3.12 | 3.11 | 3.33  | 3.19  | 3.34  | 3.32  |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 783    | 69,596    | 21,828  | 38,270      |
|                              | Private Boat | 1,184  | 124,083   | 31,211  | 80,191      |
|                              | Shore        | 5,893  | 559,052   | 167,038 | 324,604     |
| Total Durable Expenditures   |              | 12,605 | 1,194,430 | 494,039 | 831,432     |
| Total State Economic Impacts |              | 20,465 | 1,947,161 | 714,116 | 1,274,497   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 45,839            | Fishing Tackle             | 338,507                    |
| Private Boat                                    | 125,015           | Other Equipment            | 106,725                    |
| Shore   | 422,857           | Boat Expenses              | 987,800                    |
| Total   | 593,710           | Vehicle Expenses           | 41,965                     |
|   |                   | Second Home Expenses       | 31,221                     |
|   |                   | Total Durable Expenditures | 1,506,217                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 2,099,927                  |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013  | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|-------|------|------|------|------|------|
| Coastal       | 205  | 195  | 295  | 254  | 279   | 220  | 225  | 274  | 186  | 211  |
| Non-Coastal   | 151  | 140  | 177  | 131  | 224   | 123  | 151  | 176  | 246  | 156  |
| Out-of-State  | 209  | 220  | 435  | 339  | 549   | 510  | 455  | 465  | 480  | 551  |
| Total Anglers | 566  | 554  | 907  | 723  | 1,052 | 853  | 831  | 915  | 911  | 917  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 56    | 33    | 77    | 59    | 90    | 87    | 96    | 104   | 93    | 95    |
| Private     | 2,282 | 2,316 | 2,288 | 2,114 | 2,155 | 2,037 | 2,080 | 2,010 | 2,540 | 1,833 |
| Shore       | 3,103 | 2,980 | 3,373 | 3,978 | 4,524 | 4,357 | 4,653 | 5,206 | 5,860 | 4,753 |
| Total Trips | 5,442 | 5,329 | 5,738 | 6,151 | 6,769 | 6,482 | 6,830 | 7,320 | 8,493 | 6,681 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|                              |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Bluefish                     | H | 30    | 108   | 398   | 210   | 362   | 173   | 109   | 690   | 105   | 93    |
|                              | R | 191   | 270   | 688   | 581   | 1,554 | 722   | 408   | 3,705 | 651   | 559   |
| Drum (Atlantic croaker)      | H | 663   | 2,073 | 1,844 | 544   | 860   | 2,844 | 2,003 | 559   | 1,522 | 1,771 |
|                              | R | 4,017 | 4,412 | 4,659 | 2,011 | 2,016 | 3,605 | 3,468 | 1,393 | 6,101 | 4,870 |
| Drum (kingfish) <sup>2</sup> | H | 1,366 | 2,069 | 1,408 | 646   | 2,545 | 850   | 1,082 | 916   | 1,756 | 2,047 |
|                              | R | 1,009 | 932   | 659   | 240   | 691   | 389   | 371   | 734   | 1,327 | 1,008 |
| Drum (sand seatrout)         | H | 3,095 | 5,519 | 3,379 | 2,277 | 1,078 | 1,431 | 2,315 | 1,894 | 2,639 | 2,268 |
|                              | R | 1,662 | 2,114 | 1,384 | 828   | 601   | 740   | 715   | 1,043 | 3,300 | 652   |
| Drum (spotted seatrout)      | H | 814   | 1,576 | 1,455 | 1,396 | 1,299 | 574   | 1,228 | 1,464 | 891   | 839   |
|                              | R | 1,997 | 1,152 | 2,572 | 2,030 | 2,009 | 581   | 2,354 | 2,711 | 1,567 | 1,511 |
| Porgies (sheepshead)         | H | 511   | 779   | 1,113 | 1,065 | 493   | 335   | 845   | 283   | 569   | 310   |
|                              | R | 120   | 171   | 372   | 117   | 104   | 41    | 660   | 71    | 43    | 184   |
| Red drum                     | H | 175   | 307   | 343   | 323   | 451   | 290   | 413   | 386   | 387   | 378   |
|                              | R | 347   | 377   | 244   | 808   | 1,130 | 861   | 493   | 604   | 989   | 1,297 |
| Red snapper                  | H | 277   | 241   | 604   | 403   | 757   | 364   | 630   | 646   | 1,249 | 824   |
|                              | R | 1,200 | 1,269 | 1,434 | 549   | 1,477 | 2,018 | 1,366 | 2,834 | 2,397 | 1,720 |
| Southern flounder            | H | 278   | 579   | 318   | 242   | 194   | 123   | 104   | 139   | 101   | 83    |
|                              | R | 70    | 161   | 101   | 121   | 102   | 74    | 110   | 85    | 12    | 49    |
| Spanish mackerel             | H | 204   | 631   | 1,309 | 1,478 | 2,921 | 477   | 2,240 | 1,772 | 2,529 | 1,601 |
|                              | R | 127   | 297   | 447   | 477   | 2,496 | 162   | 1,054 | 355   | 1,233 | 1,362 |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> Drum (kingfish) include southern kingfish and Gulf kingfish.

## 2017 Alabama State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 329,993 (1.3%)      | 100,419 (1.3%)  | 1,690,061 (1.3%) | 71.7 (1.1%)                  | 116 (1.1%)                          | 214                               | 0.45  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product prep. & packaging | Firms    | 41    | 68    | 67    | 47    | 58    | 57    | 49    | 38    | 44    |
|                                   | Receipts | 1,809 | 3,314 | 4,354 | 1,965 | 3,069 | 3,446 | 2,901 | 3,365 | 3,362 |
| Seafood sales, retail             | Firms    | 67    | 71    | 58    | 68    | 66    | 55    | 46    | 43    | 48    |
|                                   | Receipts | 5,484 | 5,197 | 4,759 | 7,073 | 5,520 | 4,351 | 3,274 | 2,971 | 3,602 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 22     | 21     | 16     | 17     | 22     | 23     | 20     | 20     | 20     |
|                                   | Employees      | 1,086  | 1,128  | 882    | 778    | 989    | 963    | 961    | 900    | 892    |
|                                   | Payroll        | 24,900 | 22,824 | 21,922 | 19,730 | 22,641 | 23,973 | 25,951 | 27,924 | 25,272 |
| Seafood sales, wholesale          | Establishments | 28     | 23     | 25     | 16     | 18     | 18     | 21     | 17     | 16     |
|                                   | Employees      | 339    | 332    | 321    | 306    | 281    | 388    | 378    | 412    | 280    |
|                                   | Payroll        | 5,893  | 5,119  | 6,547  | 6,221  | 6,861  | 9,321  | 10,034 | 10,487 | 5,629  |
| Seafood sales, retail             | Establishments | 31     | 34     | 32     | 32     | 28     | 31     | 32     | 32     | 37     |
|                                   | Employees      | 130    | 132    | 120    | 189    | 219    | 200    | 234    | 255    | 157    |
|                                   | Payroll        | 2,044  | 2,016  | 1,888  | 2,990  | 3,267  | 3,330  | 3,706  | 4,013  | 3,040  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

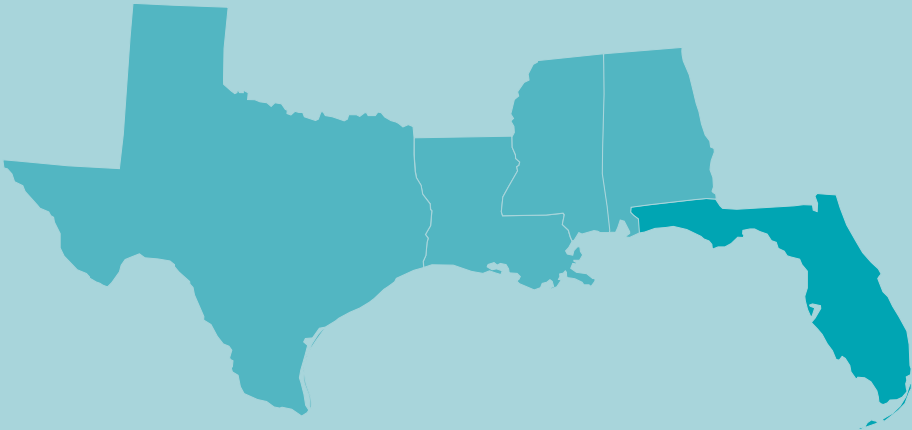
|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 40      | 32      | 35      | 37      | 38      | 37      | 41      | 43      | 35      |
|  | Employees      | 3,913   | 2,598   | 3,176   | 4,936   | 5,948   | 5,904   | 6,049   | 6,025   | 5,748   |
|  | Payroll        | 159,065 | 151,813 | 166,116 | 251,063 | 303,016 | 311,296 | 342,082 | 342,073 | 341,849 |
| Deep Sea Freight Transportation                | Establishments | 7       | 5       | 6       | 5       | 5       | 2       | 2       | 1       | NA      |
|  | Employees      | ds      | ds      | ds      | ds      | ds      | ds      | ds      | 0       | NA      |
|  | Payroll        | ds      | ds      | ds      | ds      | ds      | ds      | ds      | 0       | NA      |
| Deep Sea Passenger Transportation              | Establishments | 3       | 2       | 2       | 1       | NA      | NA      | NA      | NA      | NA      |
|  | Employees      | ds      | ds      | ds      | ds      | NA      | NA      | NA      | NA      | NA      |
|  | Payroll        | ds      | ds      | ds      | ds      | NA      | NA      | NA      | NA      | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 4       | 5       | 5       | 4       | 5       | 5       | 4       | 4       | 8       |
|  | Employees      | ds      | ds      | 215     | ds      | ds      | 45      | ds      | 0       | 56      |
|  | Payroll        | ds      | ds      | 13,117  | ds      | ds      | 2,617   | ds      | 0       | 4,066   |
| Port and Harbor Operations                     | Establishments | 5       | 5       | 3       | 6       | 3       | 2       | 2       | 2       | 7       |
|  | Employees      | ds      | ds      | ds      | 101     | 4       | ds      | ds      | 0       | 62      |
|  | Payroll        | ds      | ds      | ds      | 5,788   | 160     | ds      | ds      | 0       | 3,704   |
| Marine Cargo Handling                          | Establishments | 19      | 19      | 19      | 10      | 13      | 13      | 14      | 15      | 12      |
|  | Employees      | 658     | 548     | 536     | ds      | 554     | 778     | 666     | 709     | 574     |
|  | Payroll        | 27,272  | 32,143  | 34,998  | ds      | 34,481  | 37,273  | 37,154  | 47,407  | 44,177  |
| Navigational Services to Shipping              | Establishments | 16      | 16      | 16      | 14      | 12      | 16      | 14      | 14      | 22      |
|  | Employees      | 294     | 276     | 283     | 241     | 208     | 124     | 121     | 113     | 293     |
|  | Payroll        | 15,383  | 14,737  | 14,981  | 8,808   | 14,761  | 6,902   | 6,922   | 5,911   | 17,849  |
| Marinas  | Establishments | 55      | 54      | 53      | 57      | 54      | 54      | 57      | 57      | 56      |
|  | Employees      | 278     | 609     | ds      | 329     | 332     | 343     | 387     | 372     | 482     |
|  | Payroll        | 8,418   | 12,149  | 12,196  | 10,253  | 9,659   | 9,804   | 11,182  | 12,086  | 15,065  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Tables | West Florida



## West Florida | Commercial Fisheries

2018 Economic Impacts of the Florida Seafood Industry (millions of dollars)<sup>1</sup>

|                                    | With Imports |        |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|--------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales  | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 82,094       | 19,200 | 3,591  | 6,422       | 9,847           | 1,006 | 265    | 406         |
| Commercial Harvesters              | 6,431        | 493    | 154    | 205         | 6,431           | 493   | 154    | 205         |
| Seafood Processors & Dealers       | 4,774        | 900    | 174    | 343         | 525             | 106   | 21     | 40          |
| Importers                          | 43,137       | 13,960 | 2,237  | 4,256       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 10,450       | 1,400  | 550    | 684         | 434             | 58    | 23     | 28          |
| Retail                             | 17,302       | 2,446  | 476    | 935         | 2,456           | 348   | 68     | 133         |

## Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 118,907 | 138,672 | 167,406 | 152,757 | 190,428 | 211,678 | 196,142 | 186,101 | 185,756 | 190,431 |
| Finfish            | 50,748  | 41,535  | 60,515  | 63,227  | 70,408  | 72,084  | 65,574  | 68,537  | 64,959  | 58,660  |
| Shellfish          | 66,549  | 96,051  | 105,638 | 88,023  | 118,257 | 137,282 | 129,064 | 115,356 | 118,857 | 130,297 |
| Other              | 1,611   | 1,087   | 1,252   | 1,507   | 1,763   | 2,311   | 1,504   | 2,208   | 1,940   | 1,475   |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Blue crab          | 4,197   | 6,744   | 7,829   | 5,490   | 6,791   | 7,406   | 8,508   | 6,596   | 7,194   | 8,884   |
| Gag                | 2,749   | 2,079   | 1,439   | 2,445   | 2,846   | 2,889   | 2,783   | 4,671   | 2,556   | 2,763   |
| Lobsters           | 12,207  | 32,709  | 35,575  | 22,257  | 47,125  | 53,420  | 44,062  | 41,316  | 31,947  | 43,632  |
| Mullet             | 5,109   | 4,189   | 8,649   | 6,192   | 11,409  | 9,389   | 6,181   | 6,988   | 5,009   | 4,499   |
| Oyster             | 6,970   | 6,299   | 8,776   | 9,887   | 5,920   | 4,179   | 4,722   | 5,163   | 5,179   | 3,169   |
| Quahog clam        | 1,909   | 1,029   | 1,003   | 805     | 1,141   | 221     | 191     | 58      | 117     | 73      |
| Red grouper        | 10,488  | 8,992   | 15,086  | 16,761  | 16,428  | 21,219  | 18,952  | 17,881  | 14,158  | 11,258  |
| Red snapper        | 2,980   | 4,553   | 5,417   | 6,142   | 8,208   | 8,126   | 10,011  | 8,649   | 9,552   | 10,166  |
| Shrimp             | 22,467  | 24,977  | 27,255  | 23,831  | 30,452  | 42,790  | 34,663  | 31,189  | 44,136  | 41,417  |
| Stone crab         | 17,739  | 23,258  | 24,233  | 24,594  | 25,172  | 27,965  | 35,775  | 29,925  | 29,058  | 32,273  |

Total Landings and Landings of Key Species/Species Groups (thousands of pounds)<sup>2</sup>

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 69,859 | 67,481 | 77,399 | 74,861 | 74,838 | 79,742 | 69,840 | 71,367 | 74,859 | 71,323 |
| Finfish            | 38,899 | 31,950 | 39,586 | 41,774 | 38,728 | 40,966 | 35,004 | 39,730 | 36,832 | 31,102 |
| Shellfish          | 29,191 | 33,892 | 36,135 | 30,661 | 34,003 | 30,763 | 32,800 | 29,424 | 36,081 | 39,184 |
| Other              | 1,769  | 1,639  | 1,678  | 2,425  | 2,107  | 8,013  | 2,036  | 2,213  | 1,946  | 1,037  |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 3,371  | 5,796  | 6,924  | 4,463  | 4,767  | 4,467  | 4,880  | 3,871  | 4,411  | 5,465  |
| Gag                | 823    | 572    | 369    | 613    | 687    | 689    | 642    | 1,076  | 575    | 576    |
| Lobsters           | 3,962  | 5,280  | 5,298  | 3,772  | 5,647  | 5,041  | 5,451  | 5,017  | 3,624  | 5,824  |
| Mullet             | 9,166  | 7,258  | 11,428 | 8,632  | 11,294 | 11,945 | 8,647  | 9,321  | 7,042  | 6,054  |
| Oyster             | 2,875  | 2,164  | 3,167  | 3,368  | 1,735  | 758    | 844    | 853    | 786    | 517    |
| Quahog clam        | 284    | 164    | 154    | 132    | 199    | 36     | 23     | 7      | 13     | 9      |
| Red grouper        | 4,387  | 3,488  | 5,635  | 6,151  | 5,479  | 6,630  | 5,672  | 5,304  | 3,921  | 2,801  |
| Red snapper        | 863    | 1,317  | 1,538  | 1,699  | 2,216  | 2,107  | 2,646  | 2,338  | 2,532  | 2,565  |
| Shrimp             | 10,416 | 11,959 | 11,930 | 9,493  | 11,007 | 12,877 | 13,386 | 12,153 | 19,429 | 20,252 |
| Stone crab         | 2,691  | 2,550  | 2,727  | 2,667  | 1,946  | 1,948  | 2,759  | 3,006  | 2,510  | 2,114  |

Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)<sup>2</sup>

|             | 2009 | 2010 | 2011 | 2012 | 2013  | 2014  | 2015  | 2016 | 2017  | 2018  |
|-------------|------|------|------|------|-------|-------|-------|------|-------|-------|
| Blue crab   | 1.25 | 1.16 | 1.13 | 1.23 | 1.42  | 1.66  | 1.74  | 1.70 | 1.63  | 1.63  |
| Gag         | 3.34 | 3.63 | 3.90 | 3.99 | 4.14  | 4.19  | 4.33  | 4.34 | 4.45  | 4.79  |
| Lobsters    | 3.08 | 6.20 | 6.72 | 5.90 | 8.34  | 10.60 | 8.08  | 8.24 | 8.81  | 7.49  |
| Mullet      | 0.56 | 0.58 | 0.76 | 0.72 | 1.01  | 0.79  | 0.71  | 0.75 | 0.71  | 0.74  |
| Oyster      | 2.42 | 2.91 | 2.77 | 2.94 | 3.41  | 5.51  | 5.60  | 6.05 | 6.59  | 6.13  |
| Quahog clam | 6.73 | 6.28 | 6.51 | 6.08 | 5.74  | 6.20  | 8.17  | 7.82 | 8.65  | 7.67  |
| Red grouper | 2.39 | 2.58 | 2.68 | 2.73 | 3.00  | 3.20  | 3.34  | 3.37 | 3.61  | 4.02  |
| Red snapper | 3.45 | 3.46 | 3.52 | 3.62 | 3.70  | 3.86  | 3.78  | 3.70 | 3.77  | 3.96  |
| Shrimp      | 2.16 | 2.09 | 2.28 | 2.51 | 2.77  | 3.32  | 2.59  | 2.57 | 2.27  | 2.05  |
| Stone crab  | 6.59 | 9.12 | 8.89 | 9.22 | 12.94 | 14.36 | 12.97 | 9.96 | 11.58 | 15.27 |

<sup>1</sup> Information reported in this table is for the entire state of Florida.<sup>2</sup> NA = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|------------------------------|--------------|--------------|--------------|---------------|--------------------|
| Trip Impacts by Fishing Mode | For-Hire     | 4,460        | 468,999      | 163,205       | 279,286            |
|                              | Private Boat | 8,861        | 936,862      | 317,180       | 604,447            |
|                              | Shore        | 11,983       | 1,265,624    | 426,607       | 809,871            |
| Total Durable Expenditures   |              | 46,115       | 5,675,583    | 2,073,599     | 3,369,598          |
| Total State Economic Impacts |              | 71,419       | 8,347,067    | 2,980,591     | 5,063,201          |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 264,571                  | Fishing Tackle             | 1,125,229                         |
| Private Boat                                    | 816,594                  | Other Equipment            | 468,883                           |
| Shore   | 885,922                  | Boat Expenses              | 2,560,796                         |
| Total   | 1,967,086                | Vehicle Expenses           | 263,560                           |
|   |                          | Second Home Expenses       | 50,495                            |
|   |                          | Total Durable Expenditures | 4,468,963                         |
| Total State Trip and Durable Goods Expenditures |                          |                            | 6,436,049                         |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|                          | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal                  | 1,551       | 1,538       | 1,592       | 1,718       | 1,813       | 1,649       | 1,414       | 1,393       | 1,400       | 1,193       |
| Non-Coastal <sup>1</sup> | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Out-of-State             | 1,671       | 1,470       | 1,624       | 2,141       | 2,538       | 2,716       | 2,399       | 2,306       | 2,383       | 2,046       |
| Total Anglers            | 3,222       | 3,008       | 3,216       | 3,859       | 4,351       | 4,365       | 3,813       | 3,699       | 3,783       | 3,238       |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 575         | 494         | 560         | 715         | 686         | 693         | 769         | 805         | 772         | 825         |
| Private     | 19,828      | 20,585      | 20,688      | 23,306      | 21,551      | 18,859      | 16,775      | 17,883      | 18,025      | 17,326      |
| Shore       | 15,804      | 18,368      | 18,815      | 20,977      | 24,056      | 19,073      | 18,186      | 20,249      | 23,043      | 22,845      |
| Total Trips | 36,207      | 39,446      | 40,063      | 44,998      | 46,293      | 38,625      | 35,730      | 38,936      | 41,840      | 40,996      |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>2</sup>**

|                                  |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|----------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Common snook                     | H | 31          | 0           | 1           | 1           | 39          | 33          | 36          | 48          | 66          | 22          |
|                                  | R | 3,489       | 1,244       | 1,687       | 2,561       | 3,801       | 3,622       | 5,195       | 7,208       | 5,824       | 4,967       |
| Drum (sand and silver seatrouts) | H | 2,202       | 1,097       | 2,424       | 4,387       | 2,139       | 1,279       | 959         | 521         | 1,463       | 598         |
|                                  | R | 1,160       | 600         | 856         | 2,309       | 675         | 420         | 1,434       | 665         | 1,052       | 364         |
| Drum (spotted seatrout)          | H | 3,071       | 2,519       | 3,821       | 4,493       | 3,657       | 2,714       | 2,730       | 3,299       | 3,680       | 3,467       |
|                                  | R | 17,234      | 19,924      | 28,685      | 29,785      | 20,134      | 16,124      | 15,691      | 22,996      | 24,949      | 16,301      |
| Gag grouper                      | H | 428         | 590         | 313         | 282         | 466         | 327         | 278         | 214         | 279         | 304         |
|                                  | R | 6,128       | 5,084       | 3,597       | 2,680       | 2,663       | 2,057       | 1,289       | 2,122       | 3,354       | 2,267       |
| Gray snapper                     | H | 2,749       | 1,396       | 1,528       | 3,877       | 3,561       | 4,609       | 3,474       | 3,787       | 3,098       | 3,171       |
|                                  | R | 6,698       | 5,094       | 7,116       | 10,027      | 15,084      | 17,621      | 15,712      | 12,922      | 13,954      | 13,778      |
| King mackerel                    | H | 947         | 389         | 350         | 470         | 399         | 563         | 485         | 575         | 476         | 352         |
|                                  | R | 345         | 201         | 159         | 202         | 182         | 254         | 157         | 405         | 204         | 49          |
| Mullet <sup>3</sup>              | H | 1,315       | 2,383       | 2,308       | 4,424       | 4,394       | 4,022       | 3,146       | 3,931       | 3,699       | 9,364       |
|                                  | R | 382         | 160         | 266         | 245         | 597         | 1,519       | 519         | 1,585       | 606         | 977         |
| Porgies (sheepshead)             | H | 1,698       | 1,696       | 1,634       | 2,113       | 1,500       | 1,883       | 1,349       | 1,546       | 2,757       | 1,827       |
|                                  | R | 1,941       | 4,232       | 3,054       | 3,108       | 3,468       | 3,590       | 2,130       | 2,201       | 4,039       | 4,956       |
| Red drum                         | H | 460         | 570         | 702         | 1,110       | 902         | 836         | 1,124       | 844         | 805         | 626         |
|                                  | R | 3,097       | 5,505       | 6,632       | 6,061       | 5,576       | 5,510       | 6,996       | 5,755       | 4,423       | 5,407       |
| Spanish mackerel                 | H | 3,338       | 3,767       | 3,510       | 3,796       | 5,960       | 3,974       | 3,184       | 3,677       | 3,810       | 2,964       |
|                                  | R | 3,565       | 6,130       | 5,865       | 4,014       | 9,343       | 5,986       | 3,171       | 2,354       | 6,589       | 4,719       |

<sup>1</sup> Non-coastal data are not available because all of the state's residents are considered coastal county residents.<sup>2</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.<sup>3</sup> Mullet<sup>3</sup> include mullet genus and striped mullet.



**2017 Florida State Economy (% of national total)<sup>1</sup>**

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>2</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 2,245,127 (8.7%)    | 557,308 (7.1%)  | 8,385,577 (6.5%) | 378 (5.6%)                   | 532 (5.2%)                          | 984                               | 0.97  |

**Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>1</sup>**

|                                   |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Firms    | 217    | 280    | 294    | 307    | 300    | 315    | 300    | 316    | 280    |
|                                   | Receipts | 12,473 | 14,635 | 14,618 | 17,557 | 17,214 | 22,329 | 21,841 | 20,834 | 19,651 |
| Seafood sales, retail             | Firms    | 316    | 361    | 362    | 383    | 338    | 346    | 355    | 320    | 316    |
|                                   | Receipts | 25,667 | 27,964 | 29,037 | 30,765 | 25,332 | 26,433 | 29,033 | 24,296 | 27,937 |

**Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>1</sup>**

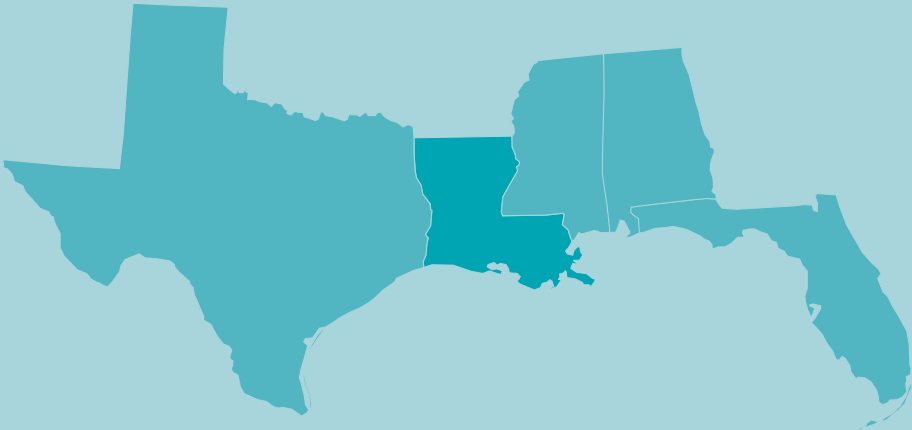
|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 25     | 27     | 24     | 27     | 25     | 27     | 27     | 23     | 23     |
|                                   | Employees      | 1,143  | 1,269  | 1,095  | 1,608  | 1,374  | 1,419  | 1,429  | 1,535  | 1,942  |
|                                   | Payroll        | 46,235 | 45,772 | 42,612 | 51,735 | 50,003 | 50,556 | 58,246 | 63,039 | 79,173 |
| Seafood sales, wholesale          | Establishments | 215    | 229    | 250    | 226    | 234    | 233    | 242    | 239    | 230    |
|                                   | Employees      | 1,762  | 1,747  | 1,913  | 1,957  | 1,878  | 1,974  | 2,055  | 1,849  | 2,098  |
|                                   | Payroll        | 72,159 | 70,889 | 77,115 | 75,945 | 79,266 | 83,964 | 90,247 | 83,818 | 89,907 |
| Seafood sales, retail             | Establishments | 158    | 145    | 145    | 151    | 165    | 166    | 181    | 191    | 176    |
|                                   | Employees      | 885    | 865    | 849    | 945    | 909    | 1,037  | 1,137  | 1,133  | 1,140  |
|                                   | Payroll        | 21,182 | 20,783 | 20,158 | 21,577 | 23,476 | 25,844 | 29,066 | 26,981 | 29,146 |

**Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>1,3</sup>**

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 261     | 248     | 246     | 258     | 259     | 263     | 278     | 281     | 269     |
|  | Employees      | 8,221   | 7,363   | 7,909   | 8,621   | 8,813   | 9,608   | 10,913  | 11,170  | 11,114  |
|  | Payroll        | 296,537 | 302,909 | 325,942 | 374,831 | 390,853 | 448,514 | 488,050 | 512,454 | 516,473 |
| Deep Sea Freight Transportation                | Establishments | 58      | 61      | 65      | 75      | 69      | 77      | 76      | 65      | 58      |
|  | Employees      | 2,801   | 2,279   | 2,374   | 3,345   | 2,485   | 2,015   | 2,154   | 1,639   | 2,189   |
|  | Payroll        | 180,139 | 159,025 | 177,386 | 231,887 | 140,564 | 131,069 | 137,786 | 113,897 | 193,568 |
| Deep Sea Passenger Transportation              | Establishments | 33      | 29      | 29      | 39      | 31      | 28      | 32      | 33      | 38      |
|  | Employees      | ds      | ds      | ds      | ds      | ds      | ds      | 10,510  | 10,161  | 9,882   |
|  | Payroll        | ds      | ds      | ds      | ds      | ds      | ds      | 967,938 | 864,475 | 970,607 |
| Coastal and Great Lakes Freight Transportation | Establishments | 42      | 50      | 54      | 60      | 47      | 62      | 57      | 62      | 64      |
|  | Employees      | 972     | 709     | 753     | 1,381   | 1,050   | 1,743   | 1,815   | 1,966   | 2,245   |
|  | Payroll        | 37,774  | 50,217  | 53,341  | 100,402 | 82,078  | 175,366 | 173,004 | 199,592 | 242,810 |
| Port and Harbor Operations                     | Establishments | 32      | 34      | 32      | 66      | 61      | 56      | 55      | 54      | 50      |
|  | Employees      | 527     | 470     | 377     | 2,082   | 555     | 588     | 987     | 1,006   | 1,560   |
|  | Payroll        | 19,006  | 20,525  | 16,879  | 72,554  | 25,439  | 20,647  | 32,032  | 32,969  | 39,956  |
| Marine Cargo Handling                          | Establishments | 59      | 55      | 64      | 43      | 58      | 61      | 69      | 63      | 72      |
|  | Employees      | 7,288   | 7,547   | 7,484   | 4,598   | 6,258   | 6,992   | 7,834   | 7,048   | 6,269   |
|  | Payroll        | 185,309 | 191,560 | 195,458 | 86,461  | 188,997 | 179,024 | 208,186 | 191,828 | 210,284 |
| Navigational Services to Shipping              | Establishments | 145     | 145     | 150     | 151     | 180     | 190     | 196     | 194     | 226     |
|  | Employees      | 829     | 980     | 1,047   | 853     | 1,390   | 878     | 861     | 922     | 1,074   |
|  | Payroll        | 60,641  | 76,853  | 75,561  | 68,366  | 130,893 | 74,185  | 72,483  | 73,708  | 81,050  |
| Marinas  | Establishments | 428     | 430     | 411     | 432     | 444     | 464     | 466     | 458     | 450     |
|  | Employees      | 4,665   | 4,439   | 4,657   | 4,918   | 5,076   | 5,421   | 5,472   | 5,405   | 5,481   |
|  | Payroll        | 132,955 | 133,017 | 142,997 | 148,573 | 145,265 | 168,185 | 171,354 | 176,315 | 184,529 |

<sup>1</sup> All data presented on this page are for the entire state of Florida, not just West Florida.<sup>2</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.<sup>3</sup> ds = Data are suppressed.

# Tables | Louisiana



**2018 Economic Impacts of the Louisiana Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 33,217       | 2,040 | 750    | 1,020       | 32,027          | 1,786 | 699    | 934         |
| Commercial Harvesters              | 12,439       | 699   | 242    | 352         | 12,439          | 699   | 242    | 352         |
| Seafood Processors & Dealers       | 2,883        | 285   | 110    | 141         | 2,677           | 264   | 103    | 131         |
| Importers                          | 640          | 207   | 33     | 63          | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 1,058        | 135   | 46     | 60          | 934             | 119   | 41     | 53          |
| Retail                             | 16,196       | 714   | 319    | 405         | 15,977          | 704   | 314    | 399         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 287,494 | 244,507 | 331,054 | 327,870 | 396,047 | 480,068 | 368,762 | 417,711 | 369,090 | 375,899 |
| Finfish            | 70,586  | 69,887  | 111,840 | 90,061  | 103,216 | 96,810  | 108,267 | 157,447 | 84,818  | 114,458 |
| Shellfish          | 216,903 | 174,608 | 219,200 | 237,791 | 292,814 | 383,222 | 260,460 | 260,231 | 284,044 | 261,206 |
| Other              | 6       | 12      | 15      | 18      | 17      | 37      | 35      | 33      | 228     | 236     |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Blue crab          | 37,829  | 30,052  | 36,827  | 42,402  | 51,467  | 66,989  | 58,084  | 49,487  | 54,217  | 60,667  |
| Crawfish           | 15,387  | 14,014  | 9,887   | 8,291   | 16,457  | 16,144  | 6,852   | 12,373  | 12,105  | 12,550  |
| King mackerel      | 1,125   | 1,147   | 1,570   | 1,452   | 1,477   | 2,379   | 2,006   | 2,150   | 2,073   | 2,003   |
| Menhaden           | 51,405  | 57,600  | 93,547  | 64,861  | 80,325  | 72,832  | 85,439  | 132,105 | 60,909  | 90,315  |
| Mullet             | 69      | 185     | 775     | 976     | 626     | 916     | 418     | 720     | 757     | 389     |
| Oysters            | 44,134  | 24,775  | 41,086  | 41,981  | 43,832  | 64,665  | 81,806  | 62,236  | 84,417  | 75,973  |
| Red snapper        | 1,895   | 1,945   | 1,936   | 2,187   | 4,315   | 5,836   | 5,951   | 5,198   | 6,716   | 6,112   |
| Shrimp             | 119,548 | 105,764 | 131,393 | 145,103 | 181,053 | 235,420 | 113,711 | 136,128 | 133,299 | 112,016 |
| Tunas              | 6,338   | 1,647   | 3,369   | 7,906   | 4,594   | 3,418   | 2,837   | 4,290   | 2,583   | 2,324   |
| Vermilion snapper  | 755     | 371     | 505     | 662     | 473     | 688     | 619     | 914     | 821     | 699     |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)<sup>1</sup>**

|                    | 2009      | 2010      | 2011      | 2012      | 2013    | 2014    | 2015      | 2016      | 2017    | 2018      |
|--------------------|-----------|-----------|-----------|-----------|---------|---------|-----------|-----------|---------|-----------|
| Total              | 1,167,758 | 1,003,999 | 1,284,246 | 1,213,719 | 991,060 | 870,175 | 1,067,089 | 1,252,400 | 897,825 | 1,031,962 |
| Finfish            | 969,381   | 878,001   | 1,129,173 | 1,051,027 | 822,538 | 686,846 | 915,801   | 1,091,045 | 737,800 | 876,429   |
| Shellfish          | 198,375   | 125,987   | 155,065   | 162,680   | 168,508 | 183,304 | 151,272   | 161,345   | 160,006 | 155,518   |
| Other              | 2         | 12        | 9         | 13        | 15      | 26      | 16        | 10        | 19      | 15        |
| <b>Key Species</b> |           |           |           |           |         |         |           |           |         |           |
| Blue crab          | 54,140    | 30,554    | 43,891    | 44,323    | 39,064  | 43,219  | 41,308    | 40,099    | 43,874  | 42,742    |
| Crawfish           | 19,009    | 14,609    | 9,582     | 6,834     | 19,641  | 13,055  | 5,461     | 13,573    | 8,575   | 11,178    |
| King mackerel      | 901       | 690       | 986       | 954       | 759     | 1,144   | 1,047     | 994       | 1,052   | 1,021     |
| Menhaden           | 948,944   | 862,144   | 1,106,931 | 1,026,240 | 800,101 | 663,693 | 893,789   | 1,068,690 | 716,056 | 855,216   |
| Mullet             | 181       | 362       | 1,385     | 1,385     | 609     | 1,186   | 692       | 1,005     | 1,093   | 630       |
| Oysters            | 12,929    | 6,822     | 11,039    | 11,324    | 11,196  | 12,235  | 13,994    | 11,010    | 13,329  | 10,924    |
| Red snapper        | 584       | 728       | 829       | 928       | 1,067   | 1,325   | 1,405     | 1,236     | 1,557   | 1,414     |
| Shrimp             | 112,295   | 74,000    | 90,552    | 100,182   | 98,604  | 114,794 | 90,507    | 96,658    | 94,226  | 90,673    |
| Tunas              | 2,009     | 490       | 932       | 2,152     | 1,241   | 1,104   | 664       | 1,139     | 679     | 570       |
| Vermilion snapper  | 389       | 173       | 229       | 287       | 173     | 237     | 207       | 331       | 311     | 254       |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)<sup>1</sup>**

|                   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Blue crab         | 0.70 | 0.98 | 0.84 | 0.96 | 1.32 | 1.55 | 1.41 | 1.23 | 1.24 | 1.42 |
| Crawfish          | 0.81 | 0.96 | 1.03 | 1.21 | 0.84 | 1.24 | 1.25 | 0.91 | 1.41 | 1.12 |
| King mackerel     | 1.25 | 1.66 | 1.59 | 1.52 | 1.95 | 2.08 | 1.92 | 2.16 | 1.97 | 1.96 |
| Menhaden          | 0.05 | 0.07 | 0.08 | 0.06 | 0.10 | 0.11 | 0.10 | 0.12 | 0.09 | 0.11 |
| Mullet            | 0.38 | 0.51 | 0.56 | 0.70 | 1.03 | 0.77 | 0.60 | 0.72 | 0.69 | 0.62 |
| Oysters           | 3.41 | 3.63 | 3.72 | 3.71 | 3.91 | 5.29 | 5.85 | 5.65 | 6.33 | 6.95 |
| Red snapper       | 3.24 | 2.67 | 2.33 | 2.36 | 4.04 | 4.40 | 4.23 | 4.20 | 4.31 | 4.32 |
| Shrimp            | 1.06 | 1.43 | 1.45 | 1.45 | 1.84 | 2.05 | 1.26 | 1.41 | 1.41 | 1.24 |
| Tunas             | 3.16 | 3.36 | 3.62 | 3.67 | 3.70 | 3.09 | 4.27 | 3.77 | 3.80 | 4.07 |
| Vermilion snapper | 1.94 | 2.15 | 2.20 | 2.30 | 2.73 | 2.90 | 3.00 | 2.76 | 2.64 | 2.75 |

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | <b>#Jobs</b> | <b>Sales</b> | <b>Income</b> | <b>Value Added</b> |
|------------------------------|--------------|--------------|--------------|---------------|--------------------|
| Trip Impacts by Fishing Mode | For-Hire     | 1,899        | 158,059      | 49,600        | 84,145             |
|                              | Private Boat | 3,183        | 393,094      | 124,062       | 229,623            |
|                              | Shore        | 686          | 77,752       | 25,687        | 46,656             |
| Total Durable Expenditures   |              | 11,051       | 1,299,893    | 435,702       | 793,497            |
| Total State Economic Impacts |              | 16,819       | 1,928,798    | 635,051       | 1,153,922          |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| <b>Fishing Mode</b>                             | <b>Trip Expenditures</b> | <b>Equipment</b>           | <b>Durable Goods Expenditures</b> |
|---|--------------------------|----------------------------|-----------------------------------|
| For-Hire  | 98,528                   | Fishing Tackle             | 233,336                           |
| Private Boat                                    | 299,384                  | Other Equipment            | 115,838                           |
| Shore   | 59,178                   | Boat Expenses              | 907,201                           |
| Total   | 457,090                  | Vehicle Expenses           | 171,101                           |
|   |                          | Second Home Expenses       | 15,246                            |
|   |                          | Total Durable Expenditures | 1,442,722                         |
| Total State Trip and Durable Goods Expenditures |                          |                            | 1,899,812                         |

**Recreational Anglers by Residential Area (thousands of anglers)<sup>1</sup>**

|               | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Coastal       | 669         | 609         | 690         | 651         | 709         | NA          | NA          | NA          | NA          | NA          |
| Non-Coastal   | 108         | 67          | 86          | 77          | 109         | NA          | NA          | NA          | NA          | NA          |
| Out-of-State  | 139         | 120         | 183         | 165         | 262         | NA          | NA          | NA          | NA          | NA          |
| Total Anglers | 916         | 796         | 959         | 893         | 1,080       | NA          | NA          | NA          | NA          | NA          |

**Recreational Fishing Effort by Mode (thousands of angler trips)<sup>2</sup>**

|             | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For-Hire    | 168         | 76          | 97          | 108         | 122         | 131         | 160         | 179         | 179         | 183         |
| Private     | 5,731       | 6,098       | 5,944       | 5,730       | 5,477       | 2,096       | 2,266       | 2,062       | 2,130       | 2,093       |
| Shore       | 4,617       | 5,048       | 5,413       | 5,051       | 5,172       | NA          | NA          | NA          | NA          | NA          |
| Total Trips | 10,516      | 11,223      | 11,454      | 10,889      | 10,770      | 2,227       | 2,425       | 2,242       | 2,308       | 2,276       |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>3</sup>**

|                          |   | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|--------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Black drum               | H | 1,040       | 897         | 1,091       | 995         | 1,020       | 218         | 220         | 138         | 143         | 148         |
|                          | R | 2,268       | 2,424       | 2,854       | 2,421       | 4,064       | 0           | 0           | 0           | 0           | 0           |
| Drum (Atlantic croaker)  | H | 1,223       | 581         | 1,123       | 1,288       | 2,328       | 235         | 209         | 150         | 150         | 134         |
|                          | R | 2,866       | 3,861       | 5,472       | 4,122       | 3,973       | 0           | 0           | 0           | 0           | 0           |
| Drum (sand seatrout)     | H | 1,748       | 2,178       | 2,513       | 2,070       | 1,458       | 532         | 370         | 354         | 359         | 426         |
|                          | R | 1,910       | 1,150       | 2,475       | 1,397       | 1,845       | 0           | 0           | 0           | 0           | 0           |
| Drum (Southern kingfish) | H | 243         | 206         | 34          | 316         | 41          | 4           | 20          | 6           | 18          | 25          |
|                          | R | 273         | 91          | 72          | 113         | 118         | 0           | 0           | 0           | 0           | 0           |
| Drum (spotted seatrout)  | H | 17,959      | 15,582      | 19,035      | 19,410      | 16,267      | 3,231       | 4,292       | 5,326       | 5,142       | 2,578       |
|                          | R | 15,203      | 10,186      | 10,961      | 14,055      | 19,153      | 0           | 0           | 0           | 0           | 0           |
| Porgies (sheepshead)     | H | 1,588       | 1,323       | 2,748       | 1,277       | 975         | 262         | 258         | 225         | 553         | 308         |
|                          | R | 1,146       | 1,306       | 514         | 605         | 1,386       | 0           | 0           | 0           | 0           | 0           |
| Red drum                 | H | 3,918       | 5,850       | 5,780       | 3,941       | 5,679       | 1,283       | 1,244       | 1,045       | 1,644       | 1,977       |
|                          | R | 7,989       | 8,994       | 6,809       | 6,505       | 10,046      | 0           | 0           | 0           | 0           | 0           |
| Red snapper              | H | 130         | 12          | 63          | 153         | 113         | 128         | 171         | 145         | 119         | 101         |
|                          | R | 312         | 12          | 210         | 216         | 333         | 0           | 0           | 0           | 0           | 0           |
| Southern flounder        | H | 888         | 674         | 988         | 689         | 1,531       | 209         | 217         | 222         | 94          | 65          |
|                          | R | 177         | 187         | 189         | 207         | 251         | 0           | 0           | 0           | 0           | 0           |
| Yellowfin tuna           | H | 6           | 2           | 21          | 47          | 13          | 14          | 23          | 28          | 23          | 6           |
|                          | R | 0           | 0           | 8           | 6           | 2           | 0           | 0           | 0           | 0           | 0           |

<sup>1</sup> Louisiana resident participation is estimated from historical Marine Recreational Information Program (MRIP) data (2009-2013) and a state creel survey (2014-2018).

<sup>2</sup> Effort for 2014-2018 in Louisiana is estimated using data from a state creel survey and does not capture shore-based effort separately from private boat effort.

<sup>3</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

## 2017 Louisiana State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees       | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 378,493 (1.5%)      | 106,599 (1.4%)  | 1,688,674 (1.3%) | 75.4 (1.1%)                  | 120 (1.2%)                          | 251                               | 3.71  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                       |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product       | Firms    | 68     | 120    | 94     | 78     | 99     | 111    | 115    | 113    | 124    |
| prep. & packaging     | Receipts | 5,308  | 10,358 | 9,308  | 8,492  | 9,136  | 8,632  | 10,086 | 11,917 | 12,051 |
| Seafood sales, retail | Firms    | 173    | 197    | 192    | 184    | 173    | 177    | 169    | 180    | 174    |
|                       | Receipts | 17,622 | 16,001 | 18,758 | 16,804 | 17,538 | 17,383 | 17,870 | 18,880 | 17,009 |

## Seafood Sales and Processing — Employer Establishments (thousands of dollars)

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 38     | 34     | 33     | 35     | 36     | 37     | 38     | 34     | 36     |
| prep. & packaging        | Employees      | 1,301  | 1,209  | 1,006  | 1,117  | 964    | 943    | 1,015  | 1,069  | 1,495  |
|                          | Payroll        | 37,657 | 35,770 | 46,440 | 51,237 | 49,339 | 50,881 | 63,909 | 37,506 | 53,273 |
| Seafood sales, wholesale | Establishments | 98     | 97     | 94     | 103    | 106    | 109    | 111    | 116    | 114    |
|                          | Employees      | 702    | 683    | 767    | 862    | 846    | 672    | 865    | 805    | 750    |
|                          | Payroll        | 17,261 | 15,554 | 18,427 | 22,296 | 23,235 | 24,107 | 25,837 | 28,013 | 25,327 |
| Seafood sales, retail    | Establishments | 106    | 101    | 100    | 97     | 94     | 90     | 90     | 90     | 93     |
|                          | Employees      | 703    | 527    | 590    | 704    | 643    | 562    | 612    | 710    | 748    |
|                          | Payroll        | 11,564 | 11,214 | 11,090 | 13,042 | 11,213 | 10,421 | 11,802 | 13,095 | 12,844 |

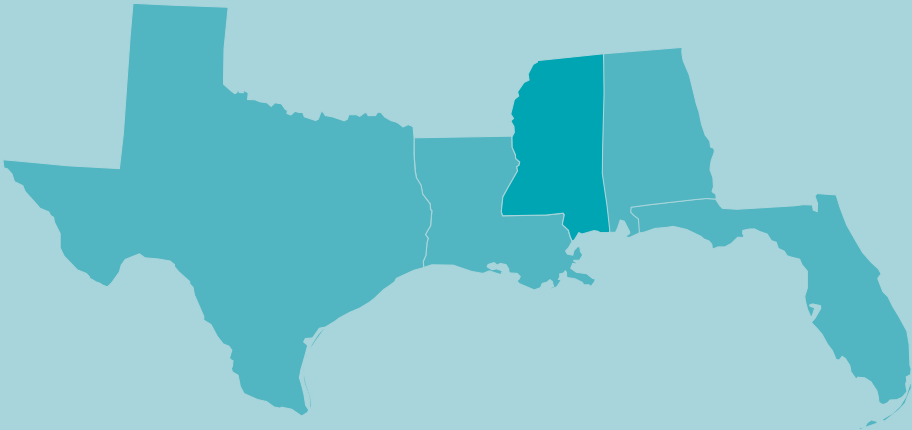
Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2</sup>

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 109     | 109     | 109     | 116     | 110     | 117     | 109     | 105     | 105     |
|  | Employees      | 12,521  | 11,737  | 11,722  | 10,933  | 7,413   | 8,512   | 8,470   | 5,629   | 5,765   |
|  | Payroll        | 613,188 | 600,259 | 639,047 | 631,098 | 416,319 | 479,243 | 401,977 | 316,927 | 311,710 |
| Deep Sea Freight Transportation                | Establishments | 21      | 16      | 17      | 18      | 11      | 19      | 21      | 16      | 13      |
|  | Employees      | 1,192   | 93      | 93      | ds      | 95      | ds      | 451     | 300     | 126     |
|  | Payroll        | 91,760  | 6,147   | 5,608   | ds      | 5,435   | ds      | 21,706  | 25,246  | 12,921  |
| Deep Sea Passenger Transportation              | Establishments | 2       | 1       | 3       | 2       | 4       | 4       | 3       | 3       | 3       |
|  | Employees      | ds      | ds      | ds      | ds      | 3       | ds      | ds      | 0       | 0       |
|  | Payroll        | ds      | ds      | ds      | ds      | 363     | ds      | ds      | 0       | 0       |
| Coastal and Great Lakes Freight Transportation | Establishments | 117     | 125     | 125     | 105     | 102     | 124     | 116     | 104     | 94      |
|  | Employees      | 6,077   | 5,610   | 5,834   | 6,422   | 5,317   | 6,275   | 5,212   | 3,919   | 4,686   |
|  | Payroll        | 391,914 | 405,796 | 417,362 | 497,165 | 458,589 | 556,693 | 396,625 | 273,575 | 351,229 |
| Port and Harbor Operations                     | Establishments | 17      | 21      | 20      | 46      | 18      | 14      | 15      | 15      | 24      |
|  | Employees      | 440     | 431     | 461     | 1,205   | 443     | ds      | 399     | 421     | 806     |
|  | Payroll        | 33,907  | 38,776  | 38,745  | 80,780  | 37,122  | ds      | 37,866  | 39,772  | 68,059  |
| Marine Cargo Handling                          | Establishments | 44      | 41      | 42      | 37      | 44      | 49      | 45      | 43      | 42      |
|  | Employees      | 2,193   | 2,511   | 2,526   | 2,016   | 2,834   | 3,106   | 3,418   | 2,955   | 2,324   |
|  | Payroll        | 92,883  | 105,063 | 108,491 | 93,896  | 174,054 | 212,786 | 175,092 | 156,891 | 116,330 |
| Navigational Services to Shipping              | Establishments | 137     | 138     | 138     | 136     | 133     | 137     | 142     | 144     | 167     |
|  | Employees      | 2,893   | 3,176   | 3,396   | 2,545   | 2,533   | 2,816   | 2,862   | 2,780   | 3,079   |
|  | Payroll        | 175,271 | 224,533 | 208,306 | 162,094 | 169,795 | 206,318 | 218,379 | 203,905 | 223,344 |
| Marinas  | Establishments | 43      | 43      | 45      | 44      | 41      | 39      | 36      | 38      | 38      |
|  | Employees      | 244     | 314     | 329     | 257     | 250     | 229     | 194     | 204     | 227     |
|  | Payroll        | 8,989   | 14,716  | 10,771  | 9,209   | 8,693   | 7,276   | 4,683   | 4,521   | 6,790   |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

# Tables | Mississippi





**2018 Economic Impacts of the Mississippi Seafood Industry (millions of dollars)**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 6,100        | 317   | 125    | 162         | 6,043           | 308   | 123    | 158         |
| Commercial Harvesters              | 1,241        | 71    | 22     | 32          | 1,241           | 71    | 22     | 32          |
| Seafood Processors & Dealers       | 1,071        | 94    | 37     | 47          | 1,035           | 91    | 36     | 45          |
| Importers                          | 18           | 6     | 1      | 2           | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 99           | 11    | 4      | 5           | 98              | 11    | 4      | 5           |
| Retail                             | 3,672        | 135   | 61     | 77          | 3,668           | 135   | 61     | 77          |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)<sup>1</sup>**

|                    | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total              | 37,744 | 21,612 | 30,163 | 49,142 | 34,600 | 38,394 | 64,711 | 28,994 | 31,073 | 44,431 |
| Finfish            | 18,430 | 8,661  | 10,400 | 23,058 | 10,571 | 20,752 | 53,337 | 11,417 | 11,980 | 26,488 |
| Shellfish          | 19,314 | 12,951 | 19,763 | 26,084 | 24,029 | 17,642 | 11,374 | 17,577 | 19,093 | 17,942 |
| Other              | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Key Species</b> |        |        |        |        |        |        |        |        |        |        |
| Blue crab          | 574    | 371    | 321    | 724    | 416    | 931    | 1,209  | 913    | 793    | 806    |
| Eastern oyster     | 6,100  | 4,268  | 928    | 1,596  | 1,544  | 1,742  | 969    | 1,088  | 344    | 19     |
| Menhaden           | 17,987 | 8,378  | 9,871  | 22,394 | 10,230 | 20,234 | 52,962 | 10,973 | 11,086 | 25,992 |
| Mulletts           | 30     | 31     | 56     | 63     | 61     | 14     | 12     | 22     | 39     | 72     |
| Oysters            | 6,100  | 4,268  | 928    | 1,596  | 1,544  | 1,742  | 969    | 1,088  | 344    | 19     |
| Red drum           | 50     | 65     | 58     | 69     | 75     | 93     | 155    | 150    | 140    | 116    |
| Shrimp             | 12,639 | 8,312  | 18,515 | 23,765 | 22,069 | 14,969 | 9,196  | 15,576 | 17,956 | 17,117 |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)<sup>1</sup>**

|                    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total              | 229,779 | 110,909 | 277,769 | 263,504 | 180,343 | 190,309 | 304,606 | 307,757 | 311,351 | 319,863 |
| Finfish            | 216,976 | 104,941 | 267,107 | 249,291 | 170,745 | 184,230 | 294,442 | 294,408 | 300,100 | 309,445 |
| Shellfish          | 12,803  | 5,968   | 10,662  | 14,213  | 9,598   | 6,079   | 10,164  | 13,350  | 11,251  | 10,417  |
| Other              | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>Key Species</b> |         |         |         |         |         |         |         |         |         |         |
| Blue crab          | 546     | 367     | 370     | 782     | 359     | 559     | 798     | 780     | 626     | 519     |
| Eastern oyster     | 2,192   | 1,453   | 247     | 425     | 336     | 333     | 182     | 245     | 60      | 3       |
| Menhaden           | 216,709 | 104,729 | 266,756 | 248,846 | 170,495 | 183,950 | 294,189 | 294,189 | 299,630 | 309,058 |
| Mulletts           | 62      | 59      | 93      | 99      | 95      | 22      | 21      | 40      | 68      | 176     |
| Oysters            | 2,192   | 1,453   | 247     | 425     | 336     | 333     | 182     | 245     | 60      | 3       |
| Red drum           | 32      | 36      | 28      | 35      | 37      | 43      | 61      | 61      | 57      | 48      |
| Shrimp             | 10,066  | 4,148   | 10,045  | 13,006  | 8,903   | 5,187   | 9,184   | 12,324  | 10,566  | 9,896   |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)<sup>1</sup>**

|                | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| Blue crab      | 1.05 | 1.01 | 0.87 | 0.93 | 1.16 | 1.66 | 1.51 | 1.17 | 1.27 | 1.55 |
| Eastern oyster | 2.78 | 2.94 | 3.75 | 3.75 | 4.59 | 5.23 | 5.32 | 4.44 | 5.78 | 7.46 |
| Menhaden       | 0.08 | 0.08 | 0.04 | 0.09 | 0.06 | 0.11 | 0.18 | 0.04 | 0.04 | 0.08 |
| Mulletts       | 0.48 | 0.52 | 0.61 | 0.64 | 0.64 | 0.63 | 0.56 | 0.55 | 0.58 | 0.41 |
| Oysters        | 2.78 | 2.94 | 3.75 | 3.75 | 4.59 | 5.23 | 5.32 | 4.44 | 5.78 | 7.46 |
| Red drum       | 1.57 | 1.77 | 2.04 | 1.99 | 2.04 | 2.15 | 2.53 | 2.48 | 2.47 | 2.42 |
| Shrimp         | 1.26 | 2.00 | 1.84 | 1.83 | 2.48 | 2.89 | 1.00 | 1.26 | 1.70 | 1.73 |

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs | Sales   | Income  | Value Added |
|------------------------------|--------------|-------|---------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 191   | 15,786  | 4,809   | 8,360       |
|                              | Private Boat | 557   | 53,538  | 16,966  | 32,251      |
|                              | Shore        | 741   | 57,663  | 20,298  | 37,325      |
| Total Durable Expenditures   |              | 4,467 | 474,757 | 161,938 | 297,211     |
| Total State Economic Impacts |              | 5,955 | 601,744 | 204,012 | 375,147     |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 10,347            | Fishing Tackle             | 122,121                    |
| Private Boat                                    | 50,290            | Other Equipment            | 61,101                     |
| Shore   | 49,542            | Boat Expenses              | 360,792                    |
| Total   | 110,179           | Vehicle Expenses           | 105,948                    |
|   |                   | Second Home Expenses       | 391                        |
|   |                   | Total Durable Expenditures | 650,352                    |
| Total State Trip and Durable Goods Expenditures |                   |                            | 760,531                    |

**Recreational Anglers by Residential Area (thousands of anglers)**

|               | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Coastal       | 125  | 137  | 160  | 179  | 171  | 171  | 195  | 156  | 153  | 169  |
| Non-Coastal   | 36   | 29   | 48   | 60   | 67   | 62   | 48   | 83   | 50   | 78   |
| Out-of-State  | 50   | 50   | 60   | 91   | 101  | 94   | 114  | 106  | 97   | 176  |
| Total Anglers | 212  | 216  | 268  | 331  | 339  | 328  | 357  | 345  | 300  | 423  |

**Recreational Fishing Effort by Mode (thousands of angler trips)**

|             | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 11    | 4     | 11    | 11    | 11    | 17    | 42    | 25    | 16    | 19    |
| Private     | 1,629 | 1,566 | 1,600 | 1,643 | 1,599 | 1,486 | 1,568 | 1,733 | 1,606 | 1,527 |
| Shore       | 2,933 | 2,940 | 2,892 | 2,838 | 2,731 | 2,808 | 2,984 | 2,960 | 3,225 | 3,009 |
| Total Trips | 4,573 | 4,509 | 4,503 | 4,493 | 4,342 | 4,312 | 4,594 | 4,718 | 4,848 | 4,555 |

**Harvest (H) and Release (R) of Key Species/Species Groups (thousands of fish)<sup>1,2</sup>**

|                                  |   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|----------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Drum (Atlantic croaker)          | H | 1,648 | 692   | 1,358 | 752   | 819   | 2,120 | 957   | 1,241 | 1,262 | 1,270 |
|                                  | R | 2,679 | 1,585 | 1,842 | 1,673 | 630   | 704   | 1,690 | 3,292 | 4,239 | 4,503 |
| Drum (kingfish) <sup>3</sup>     | H | 351   | 413   | 395   | 546   | 976   | 437   | 1,066 | 1,713 | 798   | 698   |
|                                  | R | 153   | 162   | 90    | 326   | 195   | 298   | 122   | 409   | 391   | 130   |
| Drum (sand and silver seatrouts) | H | 2,574 | 2,338 | 2,599 | 2,145 | 1,589 | 1,797 | 2,391 | 3,242 | 4,924 | 2,540 |
|                                  | R | 957   | 680   | 879   | 1,063 | 494   | 305   | 418   | 1,059 | 1,513 | 1,790 |
| Drum (spotted seatrout)          | H | 2,215 | 1,421 | 1,563 | 1,395 | 1,985 | 1,183 | 1,838 | 3,410 | 1,390 | 1,383 |
|                                  | R | 2,145 | 1,645 | 1,218 | 2,071 | 2,354 | 1,818 | 1,741 | 3,693 | 4,053 | 2,059 |
| Porgies (sheepshead)             | H | 79    | 119   | 557   | 235   | 207   | 198   | 185   | 107   | 815   | 98    |
|                                  | R | 26    | 10    | 89    | 91    | 122   | 52    | 1,059 | 48    | 77    | 124   |
| Red drum                         | H | 202   | 219   | 153   | 210   | 320   | 201   | 203   | 329   | 246   | 384   |
|                                  | R | 605   | 571   | 387   | 1,173 | 828   | 885   | 575   | 769   | 1,662 | 1,500 |
| Red snapper                      | H | 52    | < 1   | 40    | 109   | 48    | 13    | 20    | 91    | 121   | 101   |
|                                  | R | 335   | 120   | < 1   | 10    | 134   | 127   | 472   | 333   | 750   | 246   |
| Sharks <sup>4</sup>              | H | 34    | 232   | 56    | 19    | 109   | 12    | 11    | 6     | 12    | 4     |
|                                  | R | 81    | 333   | 82    | 207   | 147   | 65    | 27    | 134   | 28    | 94    |
| Southern flounder                | H | 597   | 546   | 421   | 401   | 448   | 255   | 172   | 225   | 96    | 126   |
|                                  | R | 326   | 256   | 246   | 319   | 279   | 138   | 225   | 110   | 39    | 249   |
| Striped mullet                   | H | 376   | 521   | 1,291 | 660   | 1,883 | 869   | 2,664 | 1,254 | 615   | 1,631 |
|                                  | R | 18    | 65    | 165   | 204   | 57    | 17    | 323   | 18    | 5     | 133   |

<sup>1</sup> Key species/species groups were chosen to represent those most frequently caught or highly prized by recreational anglers, or important for management. It is not a comprehensive list nor ranked by the total number of fish caught/released.

<sup>2</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.

<sup>3</sup> Drum (kingfish) include southern kingfish and Gulf kingfish.

<sup>4</sup> Sharks include requiem shark family, Atlantic sharpnose shark, requiem shark genus, unidentified (sharks), requiem shark, blacktip shark, unidentified sharks, and shark species.

## 2017 Mississippi State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees     | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|----------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 219,596 (0.9%)      | 59,294 (0.8%)   | 939,485 (0.7%) | 35.4 (0.5%)                  | 59.6 (0.6%)                         | 113                               | 0.99  |

Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)<sup>2</sup>

|                       |          | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|-----------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Seafood product       | Firms    | 16    | 30    | 25    | 27    | ds    | 21    | 12    | 20    | 19    |
| prep. & packaging     | Receipts | 753   | 1,937 | 2,108 | 930   | ds    | 1,932 | 1,539 | 2,879 | 2,852 |
| Seafood sales, retail | Firms    | 56    | 69    | 51    | 50    | 54    | 42    | 53    | 58    | 54    |
|                       | Receipts | 4,206 | 3,421 | 3,505 | 3,957 | 3,855 | 3,129 | 4,053 | 4,836 | 4,397 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                          |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product          | Establishments | 20     | 20     | 18     | 18     | 19     | 19     | 18     | 18     | 19     |
| prep. & packaging        | Employees      | 2,796  | 2,849  | 2,464  | 2,368  | 2,284  | 2,289  | 2,370  | 2,589  | 2,686  |
|                          | Payroll        | 61,926 | 61,731 | 52,502 | 55,407 | 59,212 | 57,324 | 60,906 | 65,003 | 79,080 |
| Seafood sales, wholesale | Establishments | 16     | 18     | 18     | 17     | 14     | 14     | 14     | 15     | 13     |
|                          | Employees      | 113    | ds     | 64     | 102    | ds     | ds     | 39     | 46     | 37     |
|                          | Payroll        | 2,836  | 2,542  | 2,532  | 4,412  | 1,546  | 1,587  | 1,800  | 2,038  | 1,819  |
| Seafood sales, retail    | Establishments | 14     | 15     | 17     | 13     | 13     | 10     | 8      | 9      | 12     |
|                          | Employees      | 46     | 50     | 58     | ds     | ds     | ds     | 96     | 228    | 128    |
|                          | Payroll        | 841    | 810    | 838    | 1,902  | ds     | ds     | 2,672  | 3,092  | 3,029  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

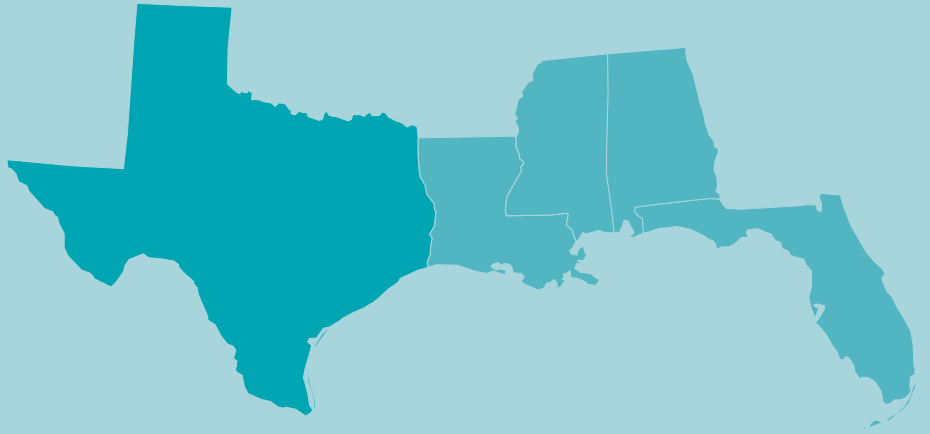
|  |                | 2009  | 2010  | 2011  | 2012  | 2013   | 2014   | 2015    | 2016    | 2017    |
|--|----------------|-------|-------|-------|-------|--------|--------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 20    | 20    | 20    | 18    | 19     | 18     | 18      | 16      | 14      |
|  | Employees      | ds    | ds    | ds    | ds    | ds     | ds     | 14,722  | 14,066  | 13,602  |
|  | Payroll        | ds    | ds    | ds    | ds    | ds     | ds     | 892,317 | 899,814 | 875,851 |
| Deep Sea Freight Transportation                | Establishments | 1     | 1     | 1     | 2     | 1      | 1      | 1       | 1       | NA      |
|  | Employees      | ds    | ds    | ds    | ds    | ds     | ds     | ds      | 0       | NA      |
|  | Payroll        | ds    | ds    | ds    | ds    | ds     | ds     | ds      | 0       | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 5     | 4     | 4     | 4     | 6      | 4      | 4       | 4       | 3       |
|  | Employees      | 114   | ds    | 127   | ds    | 230    | 277    | 259     | 0       | 1       |
|  | Payroll        | 7,730 | 8,058 | 7,233 | ds    | 17,080 | 16,365 | 17,353  | 0       | 242     |
| Port and Harbor Operations                     | Establishments | 1     | 1     | 1     | 3     | 2      | 1      | 1       | 1       | 3       |
|  | Employees      | ds    | ds    | ds    | ds    | ds     | ds     | ds      | 0       | 0       |
|  | Payroll        | ds    | ds    | ds    | ds    | ds     | ds     | ds      | 0       | 0       |
| Marine Cargo Handling                          | Establishments | 8     | 7     | 7     | 2     | 4      | 5      | 5       | 6       | 6       |
|  | Employees      | ds    | ds    | ds    | ds    | ds     | ds     | 241     | 173     | 0       |
|  | Payroll        | ds    | ds    | ds    | ds    | ds     | ds     | 10,390  | 7,562   | 0       |
| Navigational Services to Shipping              | Establishments | 7     | 8     | 6     | 7     | 6      | 7      | 7       | 7       | 9       |
|  | Employees      | ds    | 141   | ds    | ds    | ds     | ds     | 57      | 42      | 130     |
|  | Payroll        | ds    | 6,982 | ds    | ds    | ds     | ds     | 2,698   | 2,748   | 8,406   |
| Marinas  | Establishments | 13    | 18    | 19    | 16    | 16     | 18     | 17      | 18      | 17      |
|  | Employees      | 172   | 183   | 189   | 204   | 154    | 193    | 197     | 199     | 201     |
|  | Payroll        | 3,479 | 4,163 | 5,137 | 5,361 | 3,972  | 4,960  | 5,047   | 5,517   | 5,215   |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Tables | Texas



**2018 Economic Impacts of the Texas Seafood Industry (millions of dollars)<sup>1</sup>**

|                                    | With Imports |       |        |             | Without Imports |       |        |             |
|------------------------------------|--------------|-------|--------|-------------|-----------------|-------|--------|-------------|
|                                    | #Jobs        | Sales | Income | Value Added | #Jobs           | Sales | Income | Value Added |
| Total Impacts                      | 39,806       | 5,393 | 1,318  | 2,084       | 16,973          | 1,176 | 431    | 602         |
| Commercial Harvesters              | 4,613        | 445   | 133    | 210         | 4,613           | 445   | 133    | 210         |
| Seafood Processors & Dealers       | 3,433        | 331   | 124    | 164         | 1,567           | 151   | 57     | 75          |
| Importers                          | 10,206       | 3,303 | 529    | 1,007       | 0               | 0     | 0      | 0           |
| Seafood Wholesalers & Distributors | 2,231        | 347   | 116    | 160         | 449             | 70    | 23     | 32          |
| Retail                             | 19,323       | 969   | 416    | 543         | 10,343          | 510   | 218    | 285         |

**Total Landings Revenue and Landings Revenue of Key Species/Species Groups (thousands of dollars)**

|                   | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total             | 154,771 | 173,100 | 225,141 | 205,760 | 258,124 | 263,614 | 180,446 | 205,129 | 230,633 | 211,848 |
| Finfish           | 7,404   | 7,862   | 8,405   | 10,084  | 12,842  | 13,668  | 16,121  | 17,592  | 16,276  | 16,079  |
| Shellfish         | 147,367 | 165,237 | 216,736 | 195,676 | 245,282 | 249,947 | 164,325 | 187,537 | 214,357 | 195,768 |
| Key Species       | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| Other             | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| Key Species       | NA      | NA      | NA      | NA      | NA      | NA      | NA      | NA      | NA      | NA      |
| Atlantic croaker  | 484     | 531     | 621     | 743     | 819     | 690     | 725     | 856     | 767     | 1,276   |
| Black drum        | 1,377   | 1,574   | 1,443   | 1,492   | 1,706   | 1,981   | 2,074   | 2,341   | 2,458   | 1,840   |
| Blue crab         | 2,454   | 3,131   | 2,838   | 2,878   | 2,331   | 3,057   | 5,539   | 6,789   | 5,423   | 4,886   |
| Flounders         | NA      | 58      | 204     | 175     | 73      | 99      | 187     | 239     | 164     | 73      |
| Groupers          | 695     | 384     | 560     | 760     | 1,149   | 1,154   | 1,481   | 1,593   | 1,154   | 755     |
| Oysters           | 9,376   | 19,147  | 12,796  | 21,306  | 23,471  | 19,222  | 8,254   | 17,129  | 20,404  | 23,999  |
| Red snapper       | 2,398   | 3,009   | 3,274   | 4,448   | 7,329   | 7,617   | 9,387   | 10,573  | 9,881   | 10,838  |
| Shrimp            | 135,418 | 142,879 | 200,992 | 171,379 | 219,396 | 227,588 | 150,491 | 163,564 | 188,477 | 166,771 |
| Tunas             | 140     | 4       | 2       | 5       | 7       | 27      | 3       | 3       | 1       | 1       |
| Vermilion snapper | 1,328   | 1,337   | 1,274   | 1,434   | 659     | 604     | 920     | 584     | 443     | 333     |

**Total Landings and Landings of Key Species/Species Groups (thousands of pounds)**

|                   | 2009    | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total             | 102,354 | 79,503 | 96,920 | 90,159 | 83,583 | 78,027 | 84,228 | 79,366 | 90,673 | 84,385 |
| Finfish           | 4,067   | 4,209  | 4,161  | 4,148  | 4,706  | 4,822  | 5,418  | 5,730  | 5,232  | 4,657  |
| Shellfish         | 98,287  | 75,293 | 92,759 | 86,012 | 78,877 | 73,205 | 78,810 | 73,636 | 85,441 | 79,727 |
| Key Species       | -       | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Other             | 0       | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| Key Species       | NA      | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| Atlantic croaker  | 63      | 67     | 79     | 89     | 96     | 79     | 88     | 101    | 88     | 131    |
| Black drum        | 1,610   | 1,733  | 1,789  | 1,624  | 1,698  | 1,747  | 1,879  | 2,055  | 1,926  | 1,469  |
| Blue crab         | 2,844   | 3,434  | 2,886  | 2,854  | 1,902  | 2,238  | 4,336  | 5,323  | 4,132  | 3,431  |
| Flounders         | NA      | 20     | 75     | 60     | 21     | 25     | 51     | 64     | 40     | 18     |
| Groupers          | 227     | 154    | 194    | 220    | 300    | 280    | 354    | 372    | 271    | 169    |
| Oysters           | 2,733   | 5,796  | 4,342  | 5,818  | 6,126  | 4,129  | 1,587  | 3,127  | 3,504  | 3,859  |
| Red snapper       | 851     | 1,031  | 952    | 1,123  | 1,807  | 1,797  | 2,152  | 2,390  | 2,213  | 2,353  |
| Shrimp            | 92,669  | 66,022 | 85,485 | 77,304 | 70,818 | 66,815 | 72,871 | 65,171 | 77,795 | 72,415 |
| Tunas             | 46      | 1      | 1      | 3      | 3      | 9      | 1      | 2      | 1      | 1      |
| Vermilion snapper | 598     | 539    | 466    | 511    | 234    | 203    | 307    | 192    | 149    | 107    |

**Average Annual Ex-Vessel Price of Key Species/Species Groups (dollars per pound)**

|                   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Atlantic croaker  | 7.64 | 7.98 | 7.84 | 8.31 | 8.55 | 8.68 | 8.20 | 8.51 | 8.73 | 9.78 |
| Black drum        | 0.86 | 0.91 | 0.81 | 0.92 | 1.00 | 1.13 | 1.10 | 1.14 | 1.28 | 1.25 |
| Blue crab         | 0.86 | 0.91 | 0.98 | 1.01 | 1.23 | 1.37 | 1.28 | 1.28 | 1.31 | 1.42 |
| Flounders         | NA   | 2.92 | 2.74 | 2.94 | 3.55 | 3.91 | 3.65 | 3.72 | 4.10 | 3.98 |
| Groupers          | 3.06 | 2.49 | 2.89 | 3.45 | 3.84 | 4.12 | 4.18 | 4.28 | 4.25 | 4.47 |
| Oysters           | 3.43 | 3.30 | 2.95 | 3.66 | 3.83 | 4.66 | 5.20 | 5.48 | 5.82 | 6.22 |
| Red snapper       | 2.82 | 2.92 | 3.44 | 3.96 | 4.06 | 4.24 | 4.36 | 4.42 | 4.47 | 4.61 |
| Shrimp            | 1.46 | 2.16 | 2.35 | 2.22 | 3.10 | 3.41 | 2.07 | 2.51 | 2.42 | 2.30 |
| Tunas             | 3.07 | 3.19 | 1.82 | 1.83 | 2.10 | 2.94 | 2.43 | 1.41 | 1.53 | 2.11 |
| Vermilion snapper | 2.22 | 2.48 | 2.73 | 2.80 | 2.81 | 2.98 | 3.00 | 3.04 | 2.97 | 3.12 |

<sup>1</sup> 'NA' = these data are confidential and therefore not disclosable.

**2018 Economic Impacts of Recreational Fishing Expenditures (thousands of dollars)**

|                              |              | #Jobs  | Sales     | Income  | Value Added |
|------------------------------|--------------|--------|-----------|---------|-------------|
| Trip Impacts by Fishing Mode | For-Hire     | 1,768  | 200,685   | 67,723  | 120,852     |
|                              | Private Boat | 1,848  | 256,168   | 79,495  | 155,454     |
|                              | Shore        | NA     | NA        | NA      | NA          |
| Total Durable Expenditures   |              | 10,610 | 1,373,030 | 533,956 | 870,403     |
| Total State Economic Impacts |              | 14,226 | 1,829,883 | 681,174 | 1,146,709   |

**2018 Angler Trip and Durable Goods Expenditures (thousands of dollars)**

| Fishing Mode                                    | Trip Expenditures | Equipment                  | Durable Goods Expenditures |
|---|-------------------|----------------------------|----------------------------|
| For-Hire  | 118,736           | Fishing Tackle             | 266,497                    |
| Private Boat                                    | 159,636           | Other Equipment            | 155,696                    |
| Shore   | NA                | Boat Expenses              | 500,395                    |
| Total   | 278,372           | Vehicle Expenses           | 397,596                    |
|   |                   | Second Home Expenses       | 41,949                     |
|   |                   | Total Durable Expenditures | 1,362,133                  |
| Total State Trip and Durable Goods Expenditures |                   |                            | 1,640,505                  |

**Recreational Fishing Effort by Mode (thousands of angler trips)<sup>1,2</sup>**

|             | 2009  | 2010 | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| For-Hire    | 122   | 123  | 162   | 227   | 145   | 137   | 147   | 162   | 191   | 309   |
| Private     | 919   | 868  | 963   | 932   | 1,005 | 932   | 896   | 1,025 | 953   | 938   |
| Shore       | NA    | NA   | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| Total Trips | 1,041 | 991  | 1,125 | 1,159 | 1,150 | 1,069 | 1,043 | 1,187 | 1,144 | 1,247 |

**Harvest (H) of Key Species/Species Groups (thousands of fish)<sup>3,4</sup>**

|                         | 2009 | 2010 | 2011  | 2012 | 2013 | 2014 | 2015 | 2016  | 2017 | 2018 |
|-------------------------|------|------|-------|------|------|------|------|-------|------|------|
| Black drum              | 98   | 165  | 129   | 257  | 150  | 139  | 128  | 138   | 165  | 139  |
| Drum (Atlantic croaker) | 117  | 125  | 157   | 157  | 152  | 117  | 214  | 126   | 67   | 64   |
| Drum (sand seatrout)    | 111  | 127  | 227   | 177  | 151  | 147  | 110  | 135   | 96   | 60   |
| Drum (spotted seatrout) | 810  | 732  | 1,137 | 810  | 796  | 590  | 825  | 1,025 | 982  | 746  |
| King mackerel           | 16   | 6    | 9     | 9    | 10   | 13   | 9    | 12    | 15   | 24   |
| Porgies (sheepshead)    | 34   | 49   | 57    | 143  | 84   | 39   | 51   | 106   | 60   | 84   |
| Red drum                | 285  | 264  | 347   | 323  | 269  | 247  | 241  | 288   | 300  | 276  |
| Red snapper             | 31   | 33   | 36    | 34   | 48   | 40   | 50   | 31    | 45   | 55   |
| Southern flounder       | 47   | 30   | 92    | 96   | 92   | 71   | 85   | 104   | 77   | 42   |

<sup>1</sup> 'NA' = not available.<sup>2</sup> The Marine Recreational Information Program (MRIP) does not collect participation (number of anglers) or effort (number of trips) data for Texas. To calculate trip expenditure estimates, effort by fishing mode was estimated based on 2018 data provided by the Texas Parks and Wildlife Department (TPWD). [For more information: [www.tpwd.state.tx.us](http://www.tpwd.state.tx.us).]<sup>3</sup> Data collected by the Texas Parks and Wildlife Department (TPWD) is reported in this table. Data collected by TPWD differs from the data collected and reported in MRIP. Data on the number of fish released are not reported by TPWD. [For more information: [www.tpwd.state.tx.us](http://www.tpwd.state.tx.us).]<sup>4</sup> In this table, '<1' = 0-999 fish, and '1' = 1,000-1,499 fish.



## 2017 Texas State Economy (% of national total)

| #Non-Employer Firms | #Establishments | #Employees        | Annual Payroll (\$ billions) | Employee Compensation (\$ billions) | Gross State Product (\$ billions) | Commercial Fishing Location Quotient <sup>1</sup> |
|---------------------|-----------------|-------------------|------------------------------|-------------------------------------|-----------------------------------|---|
| 2,399,267 (9.3%)    | 592,677 (7.5%)  | 10,580,160 (8.2%) | 545 (8.1%)                   | 840 (8.2%)                          | 1,747                             | 0.26  |

## Seafood Sales and Processing — Non-Employer Firms (thousands of dollars)

|                                   |          | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Firms    | 82     | 99     | 119    | 123    | 123    | 128    | 178    | 165    | 131    |
|                                   | Receipts | 3,858  | 3,224  | 5,734  | 6,675  | 7,484  | 6,706  | 11,051 | 10,057 | 8,187  |
| Seafood sales, retail             | Firms    | 196    | 184    | 171    | 194    | 173    | 199    | 178    | 167    | 174    |
|                                   | Receipts | 13,177 | 12,124 | 13,433 | 14,891 | 15,094 | 15,160 | 15,660 | 13,072 | 13,935 |

Seafood Sales and Processing — Employer Establishments (thousands of dollars)<sup>2</sup>

|                                   |                | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Seafood product prep. & packaging | Establishments | 24     | 22     | 24     | 22     | 30     | 32     | 29     | 34     | 35     |
|                                   | Employees      | 1,026  | 1,184  | 1,273  | 1,248  | 1,026  | 1,062  | 1,006  | 975    | 1,023  |
|                                   | Payroll        | 29,006 | 24,961 | 26,425 | 27,737 | 27,638 | 28,643 | 29,729 | 27,765 | 33,479 |
| Seafood sales, wholesale          | Establishments | 75     | 77     | 82     | 71     | 75     | 89     | 90     | 86     | 81     |
|                                   | Employees      | 683    | 715    | 723    | 603    | 729    | 816    | 874    | 928    | 971    |
|                                   | Payroll        | 23,650 | 23,879 | 26,356 | 25,309 | 30,370 | 35,553 | 37,315 | 37,519 | 34,972 |
| Seafood sales, retail             | Establishments | 51     | 52     | 50     | 60     | 60     | 59     | 62     | 57     | 52     |
|                                   | Employees      | 189    | 199    | ds     | ds     | 331    | 395    | 415    | 439    | 279    |
|                                   | Payroll        | 3,393  | 3,742  | 4,090  | 6,102  | 6,891  | 8,201  | 9,319  | 9,097  | 5,750  |

Transport, Support and Marine Operations — Employer Establishments (thousands of dollars)<sup>2,3</sup>

|  |                | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
|--|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ship and Boat Building                         | Establishments | 99      | 97      | 91      | 89      | 87      | 88      | 84      | 81      | 82      |
|  | Employees      | 3,891   | 3,386   | 2,773   | 5,601   | 5,686   | 5,178   | 4,956   | 5,098   | 4,936   |
|  | Payroll        | 158,261 | 147,492 | 153,077 | 310,230 | 297,248 | 306,571 | 283,838 | 270,717 | 261,783 |
| Deep Sea Freight Transportation                | Establishments | 36      | 30      | 39      | 40      | 33      | 33      | 35      | 36      | 32      |
|  | Employees      | 802     | 764     | 860     | 742     | ds      | 790     | 639     | 607     | 615     |
|  | Payroll        | 61,309  | 63,408  | 71,515  | 65,818  | 44,902  | 55,106  | 47,119  | 47,952  | 59,864  |
| Deep Sea Passenger Transportation              | Establishments | 2       | 1       | 1       | NA      | 2       | 2       | 2       | 2       | NA      |
|  | Employees      | ds      | ds      | ds      | NA      | ds      | ds      | ds      | 0       | NA      |
|  | Payroll        | ds      | ds      | ds      | NA      | ds      | ds      | ds      | 0       | NA      |
| Coastal and Great Lakes Freight Transportation | Establishments | 43      | 48      | 48      | 39      | 42      | 48      | 48      | 49      | 45      |
|  | Employees      | 2,729   | 1,909   | 1,764   | 1,814   | 2,253   | 2,227   | 2,058   | 2,115   | 1,574   |
|  | Payroll        | 200,219 | 161,080 | 177,549 | 174,686 | 207,831 | 215,950 | 208,286 | 199,415 | 129,590 |
| Port and Harbor Operations                     | Establishments | 30      | 29      | 26      | 37      | 27      | 25      | 25      | 26      | 29      |
|  | Employees      | 421     | ds      | 439     | 1,381   | 630     | 387     | 395     | 572     | 688     |
|  | Payroll        | 13,778  | 18,627  | 18,842  | 55,470  | 25,229  | 13,544  | 16,436  | 17,603  | 29,801  |
| Marine Cargo Handling                          | Establishments | 57      | 54      | 55      | 42      | 48      | 53      | 56      | 57      | 56      |
|  | Employees      | 6,276   | 5,262   | 5,259   | 4,373   | 6,390   | 7,451   | 8,179   | 6,687   | 5,030   |
|  | Payroll        | 167,562 | 166,877 | 153,360 | 130,817 | 272,286 | 327,690 | 324,552 | 280,303 | 210,606 |
| Navigational Services to Shipping              | Establishments | 95      | 87      | 91      | 91      | 89      | 93      | 91      | 80      | 81      |
|  | Employees      | 1,849   | 1,606   | 1,448   | 1,676   | 1,485   | 1,588   | 1,415   | 1,430   | 1,187   |
|  | Payroll        | 137,289 | 132,283 | 113,444 | 124,500 | 130,572 | 139,259 | 144,090 | 135,341 | 110,529 |
| Marinas  | Establishments | 131     | 148     | 144     | 132     | 124     | 128     | 138     | 137     | 134     |
|  | Employees      | 1,423   | 1,198   | 1,233   | 1,169   | 1,258   | 1,222   | 1,209   | 1,226   | 1,289   |
|  | Payroll        | 33,803  | 33,968  | 34,928  | 34,711  | 36,461  | 36,776  | 37,054  | 39,658  | 38,913  |

<sup>1</sup> The U.S. Commercial Fishing Location Quotient (CFLQ) is 1. A CFLQ greater than 1 indicates that more commercial fishing occurs in this state than the national average. A CFLQ less than 1 indicates that less commercial fishing occurs in this state than the national average.

<sup>2</sup> ds = Data are suppressed.

<sup>3</sup> NA = Not applicable.

# Data Sources



Charter boats docked in San Diego, California.

Photo: Pacific Fishery Management Council/Jennifer Gilden

### MANAGEMENT CONTEXT

- Excess Harvesting Capacity in U.S. Fisheries, A Report to Congress. April 28, 2008. National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.st.nmfs.noaa.gov/spo/SPO/tm/spo93.pdf>
- "Status of U.S. Fisheries." Office of Sustainable Fisheries, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.fisheries.noaa.gov/national/population-assessments/status-us-fisheries>
- "Endangered Species Act (ESA)." Office of Protected Resources, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.fisheries.noaa.gov/national/endangered-species-conservation/endangered-species-act>
- "Certified Fisheries." Marine Stewardship Council. [www.msc.org/](http://www.msc.org/)
- "Catch Shares." Office of Sustainable Fisheries, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries). <https://www.fisheries.noaa.gov/national/laws-and-policies/catch-shares>

#### Fishery Management Councils & Fishery Plans:

- Caribbean Fishery Management Council. [www.caribbeanfmc.com](http://www.caribbeanfmc.com)
- Gulf of Mexico Fishery Management Council. [www.gulfcouncil.org](http://www.gulfcouncil.org)
- Mid-Atlantic Fishery Management Council. [www.mafmc.org/](http://www.mafmc.org/)
- New England Fishery Management Council. [www.nefmc.org/](http://www.nefmc.org/)
- North Pacific Fishery Management Council. [www.npfmc.org/](http://www.npfmc.org/)
- Pacific Fishery Management Council. [www.pcouncil.org](http://www.pcouncil.org)
- South Atlantic Fishery Management Council. [www.safmc.net](http://www.safmc.net)
- Western Pacific Fishery Management Council. [www.wpcouncil.org](http://www.wpcouncil.org)

### COMMERCIAL FISHERIES

#### Data for New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, North Pacific, Pacific and Western Pacific Regions:

- Commercial Landings Database. Obtained December 5, 2017. Office of Science & Technology, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.fisheries.noaa.gov/topic/commercial-fishing#overview>

#### Pacific cod, flatfish, Atka mackerel, walleye pollock, rockfish and sablefish data, North Pacific Region:

- Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries). Obtained December 5, 2017. <https://www.fisheries.noaa.gov/region/alaska>

#### Economic Impacts of the U.S. Commercial Seafood Industry:

- A User's Guide to the National and Coastal State I/O Model.  
[http://www.st.nmfs.noaa.gov/documents/commercial\\_seafood\\_impacts\\_2007-2009.pdf](http://www.st.nmfs.noaa.gov/documents/commercial_seafood_impacts_2007-2009.pdf)

#### Additional information:

- "NOAA Fisheries Economics & Social Sciences Program." Office of Science & Technology, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.fisheries.noaa.gov/topic/socioeconomics>
- "Data Caveats." Office of Science & Technology, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/data-caveats/index>

## RECREATIONAL FISHERIES

### Consumer Price Index (CPI) Inflation Calculator:

- CPI Inflation Calculator. Obtained September 24, 2019. Bureau of Labor Statistics.  
<https://data.bls.gov/cgi-bin/cpicalc.pl>

### Data for New England, Mid-Atlantic, South Atlantic, Gulf of Mexico and Western Pacific Regions:

- Recreational Fishery Statistics Queries." Obtained August 15, 2017. Office of Science & Technology, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA Fisheries).  
<https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-and-statistics-queries#run-a-data-query>

### Data for Texas (Gulf of Mexico Region):

- Texas Parks & Wildlife Department. Obtained August 14, 2018. <https://tpwd.texas.gov/>
- Louisiana Department of Wildlife and Fisheries. Obtained May 29, 2018. <http://www.wlf.louisiana.gov/>

### Data for Pacific Region:

- Pacific States Marine Fisheries Commission, Recreational Fisheries Information Network (RecFIN) for Oregon and Washington. Obtained August 21, 2018. <http://www.recfin.org>
- California Department of Fish and Wildlife. Obtained September 24, 2018. <https://www.wildlife.ca.gov/>
- Pacific Fishery Management Council, Salmon Stock Assessment and Fishery Evaluation (SAFE) documents. Obtained May 15, 2019. <https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>

### Data for North Pacific Region:

- Pacific States Marine Fisheries Commission, Recreational Fisheries Information Network (RecFIN). Obtained November 1, 2018.

### Recreational Fishing Expenditures and Impacts:

- Lovell, Sabrina, James Hilger, Emily Rollins, Noelle A. Olsen, and Scott Steinback. 2020. The Economic Contribution of Marine Angler Expenditures on Fishing Trips in the United States, 2017. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-201, 80 p. <https://spo.nmfs.noaa.gov/sites/default/files/TM201.pdf>
- Lovell, J. Sabrina, James Hilger, Scott Steinback, and Clifford Hutt. 2016. The Economic Contribution of Marine Angler Expenditures on Durable Goods in the United States, 2014. U.S. Dept. of Commerce. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-165, 72 p. <https://spo.nmfs.noaa.gov/content/tech-memo/economic-contribution-marine-angler-expenditures-durable-goods-united-states-2014>
- Lovell, Sabrina, Scott Steinback, and James Hilger. 2013. The Economic Contribution of Marine Angler Expenditures in the United States, 2011. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-134, 188 p. <https://spo.nmfs.noaa.gov/content/tech-memo/economic-contribution-marine-angler-expenditures-united-states-2011>

## THE MARINE ECONOMY

- "County Business Patterns Data Series." Obtained January 22, 2019. U.S. Census Bureau.  
<https://www.census.gov/programs-surveys/cbp.html>
- "Gross Domestic Product by State." Obtained February 21, 2019. Bureau of Economic Analysis.  
<http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=2#reqid=70&step=1&isuri=1>
- "Location Quotient Calculator." Obtained February 20, 2019. Bureau of Labor Statistics.  
[https://data.bls.gov/cew/doc/info/location\\_quotients.htm](https://data.bls.gov/cew/doc/info/location_quotients.htm)
- "Nonemployer Statistics." Obtained January 22, 2019. U.S. Census Bureau.  
<https://www.census.gov/programs-surveys/nonemployer-statistics.html>





# Publications



Closeup of a hook on a red snapper during a recreational fishing trip.  
Photo: NOAA Fisheries/Cameron Rhodes



Selected publications by NOAA Fisheries Economics and Social Sciences Program staff are grouped by geographic region of focus and then organized under the following categories:

- Climate Change Research
- Coastal and Marine Recreation Research
- Commercial Fisheries Economics Research
- Spatial Analysis and Marine Protected Areas Research
- Ocean Governance, Policy and Management Research
- Marine Protected Areas Research
- Other Marine Environmental Research
- Ecosystem-Based Management Research
- Recreational Fisheries Economics Research
- Habitat Economics Research
- Seafood Marketing and Trade Research
- Sociocultural Fisheries Research
- U.S. Territories and International Fisheries Research
- Protected Resources Economics Research

## UNITED STATES

### Climate Change Research

Foster, T., N. Brozovic, and C. Speir. 2017. The buffer value of groundwater when well yield is limited. *J. Hydrol.*, 547:638-649. <https://doi.org/10.1016/j.jhydrol.2017.02.034>.

Busch, D., R. Griffis, J. Link, K. Abrams, J. Baker, R. Brainard, M. Ford, J. Hare, A. Himes-Cornell, A. Hollowed, N. Mantua, S. McClatchie, M. McClure, M. Nelson, K. Osgood, J. Peterson, M. Rust, V. Saba, M. Sigler, S. Sykora-Bodie, C. Toole, E. Thunberg, R. Waples, and R. Merrick. 2016. Climate science strategy of the US National Marine Fisheries Service. *Mar. Policy*, 74:58-67. <https://doi.org/10.1016/j.marpol.2016.09.001>.

Griffis, R., L. Mcgilvray, D. Cahoon, T. Clay, E. Curchitser, K. Curtis, J. Devivo, B. Duncan, S. Gill, J. Grear, B. Halpern, J. Hare, A. Himes-Cornell, J. Howard, R. Johnston, M. Kenney, D. Legler, E. Lindstrom, T. O'Brien, S. Rumrill, E. Thunberg, T. Webler, J. West, R. Wood, S. Zador, S. Busch, and E. Fly. 2013. Research priorities to advance the oceans and coasts climate indicators system. In Report to the National Climate Assessment Indicator System Working Group. Project information available at <https://www.globalchange.gov/what-we-do/assessment/indicators-system>.

Himes-Cornell, A., S. Allen, G. Auad, M. Boatman, P. Clay, M. Dalton, S. Herrick, D. Kotowicz, P. Little, C. Lopez, P. Loring, P. Niemeier, K. Norman, L. Pfeiffer, M. Plummer, M. Rust, M. Singer, and C. Speirs. 2013. Impacts of climate change on human uses of the ocean and ocean services. In *Oceans and marine resources in a changing climate: A technical input to the 2013 National Climate Assessment* (R. Griffis and J. Howard, eds.), p. 73-137. U.S. Global Change Research Program, Washington, DC.

Howard, J., E. Babij, R. Griffis, B. Helmuth, A. Himes-Cornell, P. Niemier, M. Orbach, L. Petes, S. Allen, G. Auad, R. Beard, M. Boatman, N. Bond, T. Boyer, D. Brown, P. Clay, K. Crane, S. Cross, M. Dalton, J. Diamond, R. Diaz, Q. Dortch, E. Duffy, D. Fauquier, W. Fisher, M. Graham, B. Halpern, L. Hansen, B. Hayum, S. Herrick, A. Hollowed, D. Hutchins, E. Jewett, D. Jin, N. Knowlton, D. Kotowicz, T. Kristiansen, P. Little, C. Lopez, P. Loring, R. Lumpkin, A. Mace, K. Mengerink, J. Morrison, J. Murray, K. Norman, J. O'Donnell, J. Overland, R. Parsons, N. Pettigrew, L. Pfeiffer, E. Pidgeon, M. Plummer, J. Polovina, J. Quintrell, T. Rowles, J. Runge, M. Rust, E. Sanford, U. Send, M. Singer, C. Speir, D. Stanitski, C. Thornber, C. Wilson, and Y. Xue. 2013. Oceans and marine resources in a changing climate. In *Oceanography and marine biology: An annual review*, vol. 51, vol. 51 (R. N. Hughes, D. J. Hughes, and I. P. Smith, eds.), p. 71-192. Crc Press-Taylor & Francis Group, Boca Raton.

### Coastal and Marine Recreation Research

Marvasti, A. 2013. Estimating outdoor recreation demand with aggregate data: A revealed preference approach. *Ocean Coast. Manage.*, 71(1):170-175. <https://doi.org/10.1016/j.ocecoaman.2012.09.006>.

## Commercial Fisheries Economics Research

- Dalton, M., and B. Fissel. 2018. A unified framework for calculating aggregate commodity prices from a census dataset. *J. Econ. Soc. Meas.*, 43:85-104. <https://doi.org/10.3233/JEM-180453>.
- Holland, D., C. Speir, J. Agar, S. Crosson, G. DePiper, S. Kasperski, A. Kitts, and L. Perruso. 2017. Impact of catch shares on diversification of fishers' income and risk. *Proc. Natl. Acad. Sci.*, 114(35):9302-9307. <https://doi.org/10.1073/pnas.1702382114>.
- Brinson, A., and E. Thunberg. 2016. Performance of federally managed catch share fisheries in the United States. *Fish. Res.*, 179:213-223. <https://doi.org/10.1016/j.fishres.2016.03.008>.
- Knapp, G., and M. Rubino. 2016. The political economics of marine aquaculture in the United States. *Rev. Fish. Sci. Aquac.*, 24(3):213-229. <https://doi.org/10.1080/23308249.2015.1121202>.
- Pfeiffer, L., and T. Gratz. 2016. The effect of rights-based fisheries management on risk taking and fishing safety. *Proc. Natl. Acad. Sci.*, 113(10):2615-2620. <https://doi.org/10.1073/pnas.1509456113>.
- Squires, D. 2016. Firm behavior under quantity controls: The theory of virtual quantities. *J. Environ. Econ. Manage.*, 79:70-86. <https://doi.org/10.1016/j.jeem.2015.04.005>.
- Anderson, J., C. Anderson, J. Chu, J. Meredith, F. Asche, G. Sylvia, M. Smith, D. Anggraeni, R. Arthur, A. Guttormsen, J. McCluney, T. Ward, W. Akpalu, H. Eggert, J. Flores, M. Freeman, D. Holland, G. Knapp, M. Kobayashi, S. Larkin, K. MacLauchlin, K. Schnier, M. Soboil, S. Tveteras, H. Uchida, and D. Valderrama. 2015. The fishery performance indicators: A management tool for triple bottom line outcomes. *PLOS One*, 10(5):1-20. <https://doi.org/10.1371/journal.pone.0122809>.
- Holland, D., E. Thunberg, J. Agar, S. Crosson, C. Demarest, S. Kasperski, L. Perruso, E. Steiner, J. Stephen, A. Strelcheck, and M. Travis. 2015. U.S. catch share markets: A review of data availability and impediments to transparent markets. *Mar. Policy*, 57:103-110. <https://doi.org/10.1016/j.marpol.2015.03.027>.
- Kasperski, S. 2015. Optimal multi-species harvesting in ecologically and economically interdependent fisheries. *Environ. Resource Econ.*, 61(4):517-557. <https://doi.org/10.1007/s10640-014-9805-9>.
- Kroetz, K., J. Sanchirico, and D. Lew. 2015. Efficiency costs of social objectives in tradable permit programs. *J. Assoc. Environ. Resour. Economists*, 2(3):339-366. <https://doi.org/10.1086/681646>.
- Lambert, D., E. Thunberg, R. Felthoven, J. Lincoln, and W. Patrick. 2015. Guidance on fishing vessel risk assessments and accounting for safety at sea in fishery management design. NOAA Tech. Memo. NMFS-OSF-2, 56 p. <https://doi.org/10.7289/V58P5XJQ>.
- Squires, D., and N. Vestergaard. 2015. Productivity growth, catchability, stock assessments, and optimum renewable resource use. *Mar. Policy*, 62:309-317. <https://doi.org/10.1016/j.marpol.2015.07.006>.
- Thunberg, E., J. Walden, J. Agar, R. Felthoven, A. Harley, S. Kasperski, J. Lee, T. Lee, A. Mamula, J. Stephen, and A. Strelcheck. 2015. Measuring changes in multi-factor productivity in U.S. catch share fisheries. *Mar. Policy*, 62:294-301. <https://doi.org/10.1016/j.marpol.2015.05.008>.
- Walden, J., B. Fissel, D. Squires, and N. Vestergaard. 2015. Productivity change in commercial fisheries: An introduction to the special issue. *Mar. Policy*, 62:289-293. <https://doi.org/10.1016/j.marpol.2015.06.019>.

Collier, T., A. Mamula, and J. Ruggiero. 2014. Estimation of multi-output production functions in commercial fisheries. *Omega Int. J. Manage. Sci.*, 42(1):157-165. <https://doi.org/10.1016/j.omega.2013.05.001>.

Holland, D., E. Thunberg, J. Agar, S. Crosson, C. Demarest, S. Kasperski, L. Perruso, E. Steiner, J. Stephen, A. Strelcheck, and M. Travis. 2014. U.S. catch share markets: A review of characteristics and data availability. NOAA Tech. Memo. NMFS-F/SPO-145, 67 p.

Seung, C. 2014. Estimating effects of exogenous output changes: An application of multi-regional social accounting matrix (MRSAM) method to natural resource management. *Reg. Sci. Policy Pract.*, 6(2):177-193. <https://doi.org/10.1111/rsp3.12037>.

Walden, J., J. Agar, R. Felthoven, A. Harley, S. Kasperski, J. Lee, A. Mamula, J. Stephen, A. Strelcheck, and E. Thunberg. 2014. Productivity change in U.S. catch share fisheries. NOAA Tech. Memo. NMFS-F/SPO-146, 149 p.

Fell, H., and A. Haynie. 2013. Spatial competition with changing market institutions. *J. Appl. Econometrics*, 28(4):702-719. <https://doi.org/10.1002/jae.2272>.

Fissel, B., B. Gilbert, and J. LaRiviere. 2013. Technology adoption and diffusion with uncertainty in a commons. *Econ. Letters*, 120(2):297-301. <https://doi.org/10.1016/j.econlet.2013.04.048>.

Grafton, R., and D. Squires. 2013. Theory and practice of fisheries and water economics. In *Encyclopedia of energy, natural resource, and environmental economics*, vol. 2 (J. F. Shogren, ed.), p. 31-38. Elsevier, Waltham.

Kite-Powell, H., M. Rubino, and B. Morehead. 2013. The future of US seafood supply. *Aquacult. Econ. Manage.*, 17(3):228-250. <https://doi.org/10.1080/13657305.2013.812691>.

Schnier, K., and R. Felthoven. 2013. Production efficiency and exit in rights-based fisheries. *Land Econ.*, 89(3):538-557. <https://doi.org/10.3368/le.89.3.538>.

## Ocean Governance, Policy and Management Research

Dalton, M., D. Holland, D. Squires, J. Terry, and D. Tomberlin. 2018. An economic perspective on National Standard 1. NOAA Tech. Memo. NMFS-F/SPO-180, 70 p.

Szymkowiak, M., and A. Himes-Cornell. 2017. Do active participation measures help fishermen retain fishing privileges? *Coast. Manage.*, 45(1):56-72. <https://doi.org/10.1080/08920753.2017.1237243>.

Squires, D., and N. Vestergaard. 2016. Putting economics into maximum economic yield. *Mar. Resour. Econ.*, 31(1):101-116. <https://doi.org/10.1086/683670>.

Bibb, S., S. Bloom, A. Brinson, M. Chandler, G. Davenport, K. Denit, G. Dinardo, J. Gange, S. Giordano, A. Gutierrez, J. Hoey, S. Ignell, R. Kosaka, C. Park, T. Rankin, H. Sagar, and R. Silva. 2015. Cooperative research and cooperative management: A review with recommendations. NOAA Tech. Memo. NMFS-F/SPO-156, 78 p.

Himes-Cornell, A., and M. Orbach. 2013. Impacts of climate change on human uses of the ocean. In *Oceans and marine resources in a changing climate: A technical input to the 2013 National Climate Assessment*, vol. 51 (R. Griffis and J. Howard, eds.), p. 111-131.

## Other Marine Environmental Research

*Lipton, D., D. Lew, K. Wallmo, P. Wiley, and A. Dvarskas.* 2014. The evolution of non-market valuation of U.S. coastal and marine resources. *J. Ocean Coast. Econ.*, 2014(1):6. <https://doi.org/10.15351/2373-8456.1011>.

*Marvasti, A.* 2013. The role of price expectations and legal uncertainties in ocean mineral, exploration activities. *Resources Pol.*, 38(1):68-74. <https://doi.org/10.1016/j.resourpol.2012.09.002>.

*Ruckelshaus, M., S. Doney, H. Galindo, J. Barry, F. Chan, J. Duffy, C. English, S. Gaines, J. Grebmeier, A. Hollowed, N. Knowlton, J. Polovina, N. Rabalais, W. Sydeman, and L. Talley.* 2013. Securing ocean benefits for society in the face of climate change. *Mar. Policy*, 40:154-159. <https://doi.org/10.1016/j.marpol.2013.01.009>.

## Ecosystem-Based Management Research

*Levin, P., T. Essington, K. Marshall, L. Koehn, L. Anderson, A. Bundy, C. Carothers, F. Coleman, L. Gerber, J. Grabowski, E. Houde, O. Jensen, C. Mollmann, K. Rose, J. Sanchirico, and A. Smith.* 2018. Building effective fishery ecosystem plans. *Mar. Policy*, 92:48-57. <https://doi.org/10.1016/j.marpol.2018.01.019>.

*Holsman, K., J. Samhour, G. Cook, E. Hazen, E. Olsen, M. Dillard, S. Kasperski, S. Gaichas, C. Kelble, M. Fogarty, and K. Andrews.* 2017. An ecosystem-based approach to marine risk assessment. *Ecosyst. Health Sustainability*, 3(1):e01256. <https://doi.org/10.1002/ehs2.1256>.

*Slater, W., G. DePiper, J. Gove, C. Harvey, E. Hazen, S. Lucey, M. Karnauskas, S. Regan, E. Siddon, E. Yasumishi, S. Zador, M. Brady, M. Ford, R. Griffis, R. Shuford, H. Townsend, T. O'Brien, J. Peterson, K. Osgood, and J. Link.* 2017. Challenges, opportunities, and future directions to advance NOAA Fisheries ecosystem status reports (ESRs): Report of the National ESR Workshop. NOAA Tech. Memo. NMFS-F/SPO-174, 66 p.

*Samhour, J., A. Haupt, P. Levin, J. Link, and R. Shuford.* 2014. Lessons learned from developing integrated ecosystem assessments to inform marine ecosystem-based management in the USA. *ICES J. Mar. Sci.*, 71(5):1205-1215. <https://doi.org/10.1093/icesjms/fst141>.

## Recreational Fisheries Economics Research

*Lovell, S., J. Hilger, S. Steinback, and C. Hutt.* 2016. The economic contribution of marine angler expenditures on durable goods in the United States, 2014. NOAA Tech. Memo. NMFS-F/SPO-165, 72 p.

*Hutt, C., S. Lovell, and S. Steinback.* 2015. The economics of independent marine recreational fishing bait and tackle retail stores in the United States, 2013. NOAA Tech. Memo. NMFS-F/SPO-151, 110 p.

*Hutt, C., and G. Silva.* 2015. The economics of Atlantic highly migratory species for-hire fishing trips, July-November 2013. NOAA Tech. Memo. NMFS-OSF-4, 34 p. <https://doi.org/10.7289/V5154F2X>.

*Lovell, S., and D. Carter.* 2014. The use of sampling weights in regression models of recreational fishing-site choices. *Fish. Bull.*, 112(4):243-252. <https://doi.org/10.7755/FB.112.4.1>.

*Larson, D., and D. Lew.* 2013. The opportunity cost of travel time as a noisy wage fraction. *Am. J. Agric. Econ.*, 96(2):420-437. <https://doi.org/10.1093/ajae/aat093>.

*Lovell, S., S. Steinback, and J. Hilger.* 2013. The economic contribution of marine angler expenditures in the United States, 2011. NOAA Tech. Memo. NMFS-F/SPO-134, 188 p.

### Habitat Economics Research

*Samonte, G., P. Edwards, J. Royster, V. Ramenzoni, and S. Morlock.* 2017. Socioeconomic benefits of habitat restoration. NOAA Tech. Memo. NMFS-OHC-1, 66 p.

*Speir, C., J. Han, and N. Brozovic.* 2016. Spatial dynamic optimization of groundwater use with ecological standards for instream flow. *Water Econ. Policy*, 2(3):1650013. <https://doi.org/10.1142/s2382624x16500132>.

*Speir, C., S. Pittman, and D. Tomberlin.* 2015. Uncertainty, irreversibility and the optimal timing of large-scale investments in protected species habitat restoration. *Front. Mar. Sci.*, 2:101. <https://doi.org/10.3389/fmars.2015.00101>.

*Meiyappan, P., M. Dalton, B. O'Neill, and A. Jain.* 2014. Spatial modeling of agricultural land use change at global scale. *Ecol. Model.*, 291:152-174. <https://doi.org/10.1016/j.ecolmodel.2014.07.027>.

*Edwards, P., A. Sutton-Grier, and G. Coyle.* 2013. Investing in nature: Restoring coastal habitat blue infrastructure and green job creation. *Mar. Policy*, 38:65-71. <https://doi.org/10.1016/j.marpol.2012.05.020>.

### Seafood Marketing and Trade Research

*Helvey, M., C. Pomeroy, N. Pradhan, D. Squires, and S. Stohs.* 2017. Can the United States have its fish and eat it too? *Mar. Policy*, 75:62-67. <https://doi.org/10.1016/j.marpol.2016.10.013>.

*Jenny Sun, C.-H., F.-S. Chiang, M. Owens, and D. Squires.* 2017. Will American consumers pay more for eco-friendly labeled canned tuna? Estimating US consumer demand for canned tuna varieties using scanner data. *Mar. Policy*, 79:62-69. <https://doi.org/10.1016/j.marpol.2017.02.006>.

### Sociocultural Fisheries Research

*Olson, J., and P. Pinto da Silva.* 2018. Taking stock of fisheries science through oral history: Voices from NOAA's fishery science centers. *ICES J. Mar. Sci.*, 76(2):370-383. <https://doi.org/10.1093/icesjms/fsy187>.

*Colburn, L., M. Jepson, A. Himes-Cornell, S. Kasperski, K. Norman, C. Weng, and P. Clay.* 2017. Community participation in U.S. catch share programs. NOAA Tech. Memo. NMFS-F/SPO-179, 136 p.

*Cutler, M., T. Murphy, and M. Vasta.* 2017. An overview of the survey on the socioeconomic aspects of commercial fishing vessel owners in the Northeast and Mid-Atlantic. NOAA Tech. Memo. NMFS-NE-240, 29 p. <https://doi.org/10.13140/RG.2.2.28727.83360>.

*Love, D., P. Pinto da Silva, J. Olson, J. Fry, and P. Clay.* 2017. Fisheries, food, and health in the USA: The importance of aligning fisheries and health policies. *Agric. Food Security*, 6(1). <https://doi.org/10.1186/s40066-017-0093-9>.

*Pollnac, R., T. Seara, L. Colburn, and M. Jepson.* 2015. Taxonomy of USA east coast fishing communities in terms of social vulnerability and resilience. *Environ. Impact Assess. Rev.*, 55:136-143. <https://doi.org/10.1016/j.eiar.2015.08.006>.

*Clay, P., and A. Himes-Cornell.* 2014. Bringing social science into U.S. national climate policy. *Anthropol. News*, 55(4):e18-e51. <https://doi.org/10.1111/j.1556-3502.2014.55402.x>.

*Poe, M., K. Norman, and P. Levin.* 2014. Cultural dimensions of socioecological systems: Key connections and guiding principles for conservation in coastal environments. *Conserv. Lett.*, 7(3):166-175. <https://doi.org/10.1111/conl.12068>.

Felthoven, R., and S. Kasperski. 2013. Socioeconomic indicators for United States fisheries and fishing communities. *PICES Press*, 21(2):20-23.

## Protected Resources Economics Research

Lew, D., and K. Wallmo. 2017. Temporal stability of stated preferences for endangered species protection from choice experiments. *Ecolog. Econ.*, 131:87-97. <https://doi.org/10.1016/j.ecolecon.2016.08.009>.

Pienaar, E., D. Lew, and K. Wallmo. 2017. Intention to pay for the protection of threatened and endangered marine species: Implications for conservation program design. *Ocean Coast. Manage.*, 138:170-180. <https://doi.org/10.1016/j.ocecoaman.2017.01.019>.

Bisack, K., and G. Magnusson. 2016. Measuring management success for protected species: Looking beyond biological outcomes. *Front. Mar. Sci.*, 3(61):1-7. <https://doi.org/10.3389/fmars.2016.00061>.

Wallmo, K., K. Bisack, D. Lew, and D. Squires. 2016. Editorial: The economics of protected marine species: Concepts in research and management. *Front. Mar. Sci.*, 3:183. <https://doi.org/10.3389/fmars.2016.00183>.

Wallmo, K., and D. Lew. 2016. A comparison of regional and national values for recovering threatened and endangered marine species in the United States. *J. Environ. Manage.*, 179:38-46. <https://doi.org/10.1016/j.jenvman.2016.04.053>.

Bisack, K., D. Squires, D. Lipton, J. Hilger, D. Holland, D. Johnson, M.-Y. Lee, R. Lent, D. Lew, G. Magnusson, M. Pan, L. Queirolo, S. Stohs, C. Speir, and K. Wallmo. 2015. Proceedings of the 2014 NOAA economics of protected resources workshop, September 9-11, 2014, La Jolla, California. NOAA Tech. Memo. NMFS NE-233, 179 p. <https://doi.org/10.7289/V5QR4V3D>.

Johnston, R., D. Jarvis, K. Wallmo, and D. Lew. 2015. Multiscale spatial pattern in nonuse willingness to pay: Applications to threatened and endangered marine species. *Land Econ.*, 91(4):739-761. <https://doi.org/10.3368/le.91.4.739>.

Pienaar, E., D. Lew, and K. Wallmo. 2015. The importance of survey content: Testing for the context dependency of the New Ecological Paradigm Scale. *Soc. Sci. Res.*, 51:338-349. <https://doi.org/10.1016/j.ssresearch.2014.09.005>.

Pienaar, E., D. Lew, and K. Wallmo. 2013. Are environmental attitudes influenced by survey context? An investigation of the context dependency of the New Ecological Paradigm (NEP) Scale. *Soc. Sci. Res.*, 42(6):1542-1554. <https://doi.org/10.1016/j.ssresearch.2013.07.001>.

## NORTH PACIFIC Climate Change Research

Haynie, A., and H. Huntington. 2016. Strong connections, loose coupling: The influence of the Bering Sea ecosystem on commercial fisheries and subsistence harvests in Alaska. *Ecol. Soc.*, 21(4):6. <https://doi.org/10.5751/ES-08729-210406>.

Seung, C., and J. Ianelli. 2016. Regional economic impacts of climate change: A computable general equilibrium analysis for an Alaska fishery. *Nat. Resour. Model.*, 29(2):289-333. <https://doi.org/10.1111/nrm.12092>.

Punt, A., D. Poljak, M. Dalton, and R. Foy. 2014. Evaluating the impact of ocean acidification on fishery yields and profits: The example of red king crab in Bristol Bay. *Ecol. Model.*, 285:39-53. <https://doi.org/10.1016/j.ecolmodel.2014.04.017>.



Haynie, A., and L. Pfeiffer. 2013. Climatic and economic drivers of the Bering Sea walleye pollock (*Theragra chalcogramma*) fishery: Implications for the future. *Can. J. Fish. Aquat. Sci.*, 70(6):841-853. <https://doi.org/10.1139/cjfas-2012-0265>.

### Commercial Fisheries Economics Research

Fissel, B. 2018. Economic status of the groundfish fisheries off Alaska data visualizations. *Pac. States E-J. Sci. Visualization*. <https://doi.org/10.28966/PSESV.2018.002>.

Hsueh, L., and S. Kasperski. 2018. The impact of catch shares on multiregional fishery participation and effort: The case of West Coast harvesters in the Alaska fisheries. *Mar. Policy*, 95:123-132. <https://doi.org/10.1016/j.marpol.2018.02.008>.

Seung, C., and S. Miller. 2018. Regional economic analysis for North Pacific fisheries. NOAA Tech. Memo. NMFS-AFSC-380, 86 p.

Ward, E., S. Anderson, A. Shelton, R. Brenner, M. Adkison, A. Beaudreau, J. Watson, J. Shriver, A. Haynie, and B. Williams. 2018. Effects of increased specialization on revenue of Alaskan salmon fishers over four decades. *J. Appl. Ecol.*, 55(3):1082-1091. <https://doi.org/10.1111/1365-2664.13058>.

Watson, J., and A. Haynie. 2018. Paths to resilience: The walleye pollock fleet uses multiple fishing strategies to buffer against environmental change in the Bering Sea. *Can. J. Fish. Aquat. Sci.*, 75(11):1977-1989. <https://doi.org/10.1139/cjfas-2017-0315>.

Anderson, S., E. Ward, A. Shelton, M. Adkison, A. Beaudreau, R. Brenner, A. Haynie, J. Shriver, J. Watson, and B. Williams. 2017. Benefits and risks of diversification for individual fishers. *Proc. Natl. Acad. Sci.*, 114(40):10797-10802. <https://doi.org/10.1073/pnas.1702506114>.

Ono, K., A. Haynie, A. B. Hollowed, J. Ianelli, C. McGilliard, and A. Punt. 2017. Management strategy analysis for multispecies fisheries, including technical interactions and human behavior in modelling management decisions and fishing. *Can. J. Fish. Aquat. Sci.*, 75(8):1185-1202. <https://doi.org/10.1139/cjfas-2017-0135>.

Reimer, M., J. Abbott, and A. Haynie. 2017. Empirical models of fisheries production: Conflating technology with incentives? *Mar. Resour. Econ.*, 32(2):169-190. <https://doi.org/10.1086/690677>.

Seung, C. 2017. A multi-regional economic impact analysis of Alaska salmon fishery failures. *Ecolog. Econ.*, 138:22-30. <https://doi.org/10.1016/j.ecolecon.2017.03.020>.

Kasperski, S. 2016. Optimal multispecies harvesting in the presence of a nuisance species. *Mar. Policy*, 64:55-63. <https://doi.org/10.1016/j.marpol.2015.11.009>.

Seung, C. 2016. Identifying channels of economic impacts: An inter-regional structural path analysis for Alaska fisheries. *Mar. Policy*, 66:39-49. <https://doi.org/10.1016/j.marpol.2016.01.015>.

Seung, C., B. Muse, and E. Waters. 2016. Net economic impacts of recent Alaska salmon fishery failures and federal relief. *North Am. J. Fish. Manage.*, 36(2):351-362. <https://doi.org/10.1080/02755947.2015.1120831>.

Szymkowiak, M., and R. Felthoven. 2016. Understanding the determinants of hired skipper use in the Alaska halibut individual fishing quota fishery. *North Am. J. Fish. Manage.*, 36(5):1139-1148. <https://doi.org/10.1080/02755947.2016.1184201>.

- Abbott, J., A. Haynie, and M. Reimer. 2015. Hidden flexibility: Institutions, incentives, and the margins of selectivity in fishing. *Land Econ.*, 91(1):169-195. <https://doi.org/10.3368/le.91.1.169>.
- Call, I., and D. Lew. 2015. Tradable permit programs: What are the lessons for the new Alaska halibut catch sharing plan? *Mar. Policy*, 52:125-137. <https://doi.org/10.1016/j.marpol.2014.10.014>.
- Fissel, B. 2015. Methods for the Alaska groundfish first-wholesale price projections: Section 6 of the economic status of the groundfish fisheries off Alaska. NOAA Tech. Memo. NMFS-AFSC-305, 39 p. <https://doi.org/10.7289/V58K772W>.
- Fissel, B., R. Felthoven, S. Kasperski, and C. O'Donnell. 2015. Decomposing productivity and efficiency changes in the Alaska head and gut factory trawl fleet. *Mar. Policy*, 62:337-346. <https://doi.org/10.1016/j.marpol.2015.06.018>.
- Glass, J., G. Kruse, and S. Miller. 2015. Socioeconomic considerations of the commercial weathervane scallop fishery off Alaska using SWOT analysis. *Ocean Coast. Manage.*, 105:154-165. <https://doi.org/10.1016/j.ocecoaman.2015.01.005>.
- Lew, D., A. Himes-Cornell, and J. Lee. 2015. Weighting and imputation for missing data in a cost and earnings fishery survey. *Mar. Resour. Econ.*, 30(2):219-230. <https://doi.org/10.1086/679975>.
- Seung, C. 2015. Untangling economic impacts for Alaska fisheries: A structural path analysis. *Mar. Resour. Econ.*, 30(3):331-347. <https://doi.org/10.1086/680444>.
- Felthoven, R., J. Lee, and K. Schnier. 2014. Cooperative formation and peer effects in fisheries. *Mar. Resour. Econ.*, 29(2):133-156. <https://doi.org/10.1086/676827>.
- Fissel, B. 2014. Economic indices for the North Pacific groundfish fisheries: Calculation and visualization. NOAA Tech. Memo. NMFS-AFSC-279, 59 p.
- Haynie, A. 2014. Changing usage and value in the Western Alaska Community Development Quota (CDQ) program. *Fish. Sci.*, 80(2):181-191. <https://doi.org/10.1007/s12562-014-0723-0>.
- Peterson, M., F. Mueter, K. Criddle, and A. Haynie. 2014. Killer whale depredation and associated costs to Alaskan sablefish, Pacific halibut and Greenland turbot longliners. *PLOS One*, 9(2):e88906. <https://doi.org/10.1371/journal.pone.0088906>.
- Seung, C. 2014. Measuring spillover effects of shocks to the Alaska economy: An inter-regional social accounting matrix (IRSAM) model approach. *Econ. Systems Res.*, 26(2):224-238. <https://doi.org/10.1080/09535314.2013.803039>.
- Seung, C., E. Waters, and J. Leonard. 2014. Assessing multiregional economic impacts of Alaskan fisheries: A computable general equilibrium analysis. *Rev. Urban Reg. Devel. Stud.*, 26(3):155-173. <https://doi.org/10.1111/rurd.12026>.
- Torres, M., and R. Felthoven. 2014. Productivity growth and product choice in catch share fisheries: The case of Alaska pollock. *Mar. Policy*, 50:280-289. <https://doi.org/10.1016/j.marpol.2014.07.008>.

Waters, E., C. Seung, M. Hartley, and M. Dalton. 2014. Measuring the multiregional economic contribution of an Alaska fishing fleet with linkages to international markets. *Mar. Policy*, 50:238-248. <https://doi.org/10.1016/j.marpol.2014.07.003>.

Kasperski, S., and D. Holland. 2013. Income diversification and risk for fishermen. *Proc. Natl. Acad. Sci.*, 110(6):2076-2081. <https://doi.org/10.1073/pnas.1212278110>.

Seung, C., and E. Waters. 2013. Calculating impacts of exogenous output changes: Application of a social accounting matrix (SAM) model to Alaska fisheries. *Ann. Reg. Sci.*, 51(2):553-573. <https://doi.org/10.1007/s00168-012-0546-9>.

### Marine Protected Areas Research

Reimer, M., and A. Haynie. 2018. Mechanisms matter for evaluating the economic impacts of marine reserves. *J. Environ. Econ. Manage.*, 88:427-446. <https://doi.org/10.1016/j.jeem.2018.01.009>.

### Ecosystem-Based Management Research

Zador, S., S. Gaichas, S. Kasperski, C. Ward, R. Blake, N. Ban, A. Himes-Cornell, and J. Koehn. 2017. Linking ecosystem processes to communities of practice through commercially fished species in the Gulf of Alaska. *ICES J. Mar. Sci.*, 74(7):2024-2033. <https://doi.org/10.1093/icesjms/fsx054>.

Sanchirico, J., D. Lew, A. Haynie, D. Kling, and D. Layton. 2013. Conservation values in marine ecosystem-based management. *Mar. Policy*, 38:523-530. <https://doi.org/10.1016/j.marpol.2012.08.008>.

### Recreational Fisheries Economics Research

Lew, D., and D. Larson. 2017. Stated preferences of Alaska resident saltwater anglers for contemporary regulatory policies. *Mar. Fish. Rev.*, 79(3-4):12-25. <https://doi.org/10.7755/MFR.79.3-4.2>.

Seung, C., and D. Lew. 2017. A multiregional approach for estimating the economic impact of harvest restrictions on saltwater sportfishing. *North Am. J. Fish. Manage.*, 37(5):1112-1129. <https://doi.org/10.1080/02755947.2017.1345808>.

Lew, D., D. Putman, and D. Larson. 2016. Attitudes and preferences toward Pacific halibut management alternatives in the saltwater sport fishing charter sector in Alaska: Results from a survey. NOAA Tech. Memo. NMFS-AFSC-326, 58 p. <https://doi.org/10.7289/V5/TM-AFSC-326>.

Lew, D., and D. Larson. 2015. Stated preferences for size and bag limits of Alaska charter boat anglers. *Mar. Policy*, 61:66-76. <https://doi.org/10.1016/j.marpol.2015.07.007>.

Lew, D., G. Sampson, A. Himes-Cornell, J. Lee, and B. Garber-Yonts. 2015. Costs, earnings, and employment in the Alaska saltwater sport fishing charter sector, 2011-2013. NOAA Tech. Memo. NMFS-AFSC-299, 134 p. <https://doi.org/10.7289/V5KP803N>.

Lew, D., and D. Larson. 2014. Is a fish in hand worth two in the sea? Evidence from a stated preference study. *Fish. Res.*, 157:124-135. <https://doi.org/10.1016/j.fishres.2014.04.005>.

Lew, D., and C. Seung. 2014. On the statistical significance of regional economic impacts from recreational fishing harvest limits in southern Alaska. *Mar. Resour. Econ.*, 29(3):241-257. <https://doi.org/10.1086/677759>.

Larson, D., and D. Lew. 2013. How do harvest rates affect angler trip patterns? *Mar. Resour. Econ.*, 28(2):155-173. <https://doi.org/10.5950/0738-1360-28.2.155>.

Seung, C., and D. Lew. 2013. Accounting for variation in exogenous shocks in economic impact modeling. *Ann. Reg. Sci.*, 51(3):711-730. <https://doi.org/10.1007/s00168-012-0550-0>.

## Sociocultural Fisheries Research

Lavoie, A., K. Sparks, S. Kasperski, A. Himes-Cornell, K. Hoelting, and C. Maguire. 2018. Ground-truthing social vulnerability indices of Alaska fishing communities. *Coast. Manage.*, 46(5):359-387. <https://doi.org/10.1080/08920753.2018.1498710>.

Szymkowiak, M., and A. Himes-Cornell. 2018. Fisheries allocations for socioeconomic development: Lessons learned from the Western Alaska Community Development Quota (CDQ) program. *Ocean Coast. Manage.*, 155:40-49. <https://doi.org/10.1016/j.ocecoaman.2018.01.014>.

Himes-Cornell, A., and A. Santos. 2017. Involving fishing communities in data collection: A summary and description of the Alaska community survey, 2013. NOAA Tech. Memo. NMFS-AFSC-340, 195 p. <https://doi.org/10.7289/V5/TM-AFSC-340>.

Himes-Cornell, A., and S. Kasperski. 2016. Using socioeconomic and fisheries involvement indices to understand Alaska fishing community well-being. *Coast. Manage.*, 44(1):36-70. <https://doi.org/10.1080/08920753.2016.1116671>.

Himes-Cornell, A., C. Maguire, S. Kasperski, K. Hoelting, and R. Pollnac. 2016. Understanding vulnerability in Alaska fishing communities: A validation methodology for rapid assessment of indices related to well-being. *Ocean Coast. Manage.*, 124:53-65. <https://doi.org/10.1016/j.ocecoaman.2016.02.004>.

Kent, K., and A. Himes-Cornell. 2016. Making landfall: Linkages between fishing communities and support services. *Coast. Manage.*, 44(4):279-294. <https://doi.org/10.1080/08920753.2016.1135276>.

Himes-Cornell, A., and K. Hoelting. 2015. Resilience strategies in the face of short and long-term change: Out-migration and fisheries regulation in Alaskan fishing communities. *Ecol. Soc.*, 20(2):9. <https://doi.org/10.5751/ES-07074-200209>.

Himes-Cornell, A., and S. Kasperski. 2015. Assessing climate change vulnerability in Alaska's fishing communities. *Fish. Res.*, 162:1-11. <https://doi.org/10.1016/j.fishres.2014.09.010>.

Himes-Cornell, A., and K. Kent. 2014. Involving fishing communities in data collection: A summary and description of the Alaska community survey, 2010. NOAA Tech. Memo. NMFS-AFSC-280, 170 p.

Himes-Cornell, A., and K. Kent. 2014. Involving fishing communities in data collection: A summary and description of the Alaska community survey, 2011. NOAA Tech. Memo. NMFS-AFSC-284, 171 p.

Kasperski, S., and A. Himes-Cornell. 2014. Indicators of fishing engagement and reliance of Alaskan fishing communities. Alaska Fisheries Science Center. In Alaska Fisheries Science Center Quarterly Report. Quarterly Research Reports & Activities, January-February-March 2014, 7 p.

Package-Ward, C., and A. Himes-Cornell. 2014. Utilizing oral histories to understand the social networks of Oregon fishermen in Alaska. *Hum. Org.*, 73(3):277-288. <https://doi.org/10.17730/humo.73.3.x011748002367381>.

Himes-Cornell, A., K. Hoelting, C. Maguire, L. Munger-Little, J. Lee, J. Fisk, R. Felthoven, C. Geller, and P. Little. 2013. Community profiles for North Pacific fisheries - Alaska. NOAA Tech. Memo. NMFS-AFSC-259, Vol. 1, 70 p.

### **PACIFIC** **Commercial Fisheries Economics Research**

Cramer, L., C. Flathers, D. Caracciolo, S. Russell, and F. Conway. 2018. Graying of the fleet: Perceived impacts on coastal resilience and local policy. *Mar. Policy*, 96:27-35. <https://doi.org/10.1016/j.marpol.2018.07.012>.

Errend, M., L. Pfeiffer, E. Steiner, M. Guldin, and A. Warlick. 2018. Economic outcomes for harvesters under the West Coast groundfish trawl catch share program: Have goals and objectives been met? *Coast. Manage.*, 46(6):564-586. <https://doi.org/10.1080/08920753.2018.1522489>.

Guldin, M., and C. Anderson. 2018. Catch shares and shoreside processors: A costs and earnings exploration into the downstream sector. *Mar. Resour. Econ.*, 33(3):289-307. <https://doi.org/10.1086/698200>.

Guldin, M., A. Warlick, M. Errend, L. Pfeiffer, and E. Steiner. 2018. Shorebased processor outcomes under catch shares. *Coast. Manage.*, 46(6):587-602. <https://doi.org/10.1080/08920753.2018.1522490>.

Harsch, M., L. Pfeiffer, E. Steiner, and M. Guldin. 2018. Economic performance metrics: An overview of metrics and the use of web applications to disseminate outcomes in the U.S. West Coast groundfish trawl catch share program. NOAA Tech. Memo. NMFS-NWFSC-143, 22 p. <https://doi.org/10.25923/a4g5-cq83>.

Hodgson, E., I. Kaplan, K. Marshall, J. Leonard, T. Essington, D. Busch, E. Fulton, C. Harvey, A. Hermann, and P. McElhany. 2018. Consequences of spatially variable ocean acidification in the California Current: Lower pH drives strongest declines in benthic species in southern regions while greatest economic impacts occur in northern regions. *Ecol. Model.*, 383:106-117. <https://doi.org/10.1016/j.ecolmodel.2018.05.018>.

Pfeiffer, L. 2018. Outcomes of the West Coast groundfish trawl catch share program: The first five years. *Coast. Manage.*, 46(6):557-563. <https://doi.org/10.1080/08920753.2018.1522488>.

Richerson, K., J. Leonard, and D. Holland. 2018. Predicting the economic impacts of the 2017 West Coast salmon troll ocean fishery closure. *Mar. Policy*, 95:142-152. <https://doi.org/10.1016/j.marpol.2018.03.005>.

Somers, K., L. Pfeiffer, S. Miller, and W. Morrison. 2018. Using incentives to reduce bycatch and discarding: results under the West Coast catch share program. *Coast. Manage.*, 46(6):621-637. <https://doi.org/10.1080/08920753.2018.1522492>.

Steiner, E., S. Russell, A. Vizek, and A. Warlick. 2018. Crew in the West Coast groundfish catch share program: Changes in compensation and job satisfaction. *Coast. Manage.*, 46(6):656-676. <https://doi.org/10.1080/08920753.2018.1522495>.

Warlick, A., E. Steiner, and M. Guldin. 2018. History of the West Coast groundfish trawl fishery: Tracking socio-economic characteristics across different management policies in a multispecies fishery. *Mar. Policy*, 93:9-21. <https://doi.org/10.1016/j.marpol.2018.03.014>.

Watson, J., E. Fuller, F. Castrucci, and J. Samhouri. 2018. Fishermen follow fine-scale physical ocean features for finance. *Front. Mar. Sci.*, 5:46. <https://doi.org/10.3389/fmars.2018.00046>.

Holland, D., E. Steiner, and A. Warlick. 2017. Can vessel buybacks pay off: An evaluation of an industry funded fishing vessel buyback. *Mar. Policy*, 82:8-15. <https://doi.org/10.1016/j.marpol.2017.05.002>.

Leonard, J., and E. Steiner. 2017. Initial economic impacts of the U.S. Pacific Coast groundfish fishery individual fishing quota program. *North Am. J. Fish. Manage.*, 37(4):862-881. <https://doi.org/10.1080/02755947.2017.1330784>.

Thorson, J., R. Fonner, M. Haltuch, K. Ono, and H. Winker. 2017. Accounting for spatiotemporal variation and fisher targeting when estimating abundance from multispecies fishery data. *Can. J. Fish. Aquat. Sci.*, 74(11):1794-1807. <https://doi.org/10.1139/cjfas-2015-0598>.

Holland, D. 2016. Development of the Pacific groundfish trawl IFQ market. *Mar. Resour. Econ.*, 31(4):453-464. <https://doi.org/10.1086/687829>.

Holland, D., and S. Kasperski. 2016. The impact of access restrictions on fishery income diversification of US West Coast fishermen. *Coast. Manage.*, 44(5):452-463. <https://doi.org/10.1080/08920753.2016.1208883>.

Pfeiffer, L. 2016. Safety incidents in the West Coast catch shares fisheries. NOAA Tech. Memo. NMFS-F/SPO-160, 33 p.

Mamula, A., and T. Collier. 2015. Multifactor productivity, environmental change, and regulatory impacts in the US West Coast groundfish trawl fishery, 1994-2013. *Mar. Policy*, 62:326-336. <https://doi.org/10.1016/j.marpol.2015.06.002>.

Rose, K., J. Fiechter, E. Curchitser, K. Hedstrom, M. Bernal, S. Creekmore, A. Haynie, S. Ito, S. Lluch-Cota, B. Megrey, C. Edwards, D. Checkley, T. Koslow, S. McClatchie, F. Werner, A. MacCall, and V. Agostini. 2015. Demonstration of a fully-coupled end-to-end model for small pelagic fish using sardine and anchovy in the California current. *Prog. Oceanogr.*, 138:348-380. <https://doi.org/10.1016/j.pocean.2015.01.012>.

Chan, V., R. Clarke, and D. Squires. 2014. Full retention in tuna fisheries: Benefits, costs and unintended consequences. *Mar. Policy*, 45:213-221. <https://doi.org/10.1016/j.marpol.2013.10.016>.

Kaplan, I., D. Holland, and E. Fulton. 2014. Finding the accelerator and brake in an individual quota fishery: Linking ecology, economics, and fleet dynamics of US West Coast trawl fisheries. *ICES J. Mar. Sci.*, 71(2):308-319. <https://doi.org/10.1093/icesjms/fst114>.

Kvamsdal, S., and S. Stohs. 2014. Estimating endangered species interaction risk with the Kalman filter. *Am. J. Agric. Econ.*, 96(2):458-468. <https://doi.org/10.1093/ajae/aat092>.

Speir, C., C. Pomeroy, and J. Sutinen. 2014. Port level fishing dynamics: Assessing changes in the distribution of fishing activity over time. *Mar. Policy*, 46:171-191. <https://doi.org/10.1016/j.marpol.2014.01.014>.

Ishimura, G., S. Herrick, and U. Sumaila. 2013. Stability of cooperative management of the Pacific sardine fishery under climate variability. *Mar. Policy*, 39:333-340. <https://doi.org/10.1016/j.marpol.2012.12.008>.

Mamula, A., and J. Walden. 2013. Proceedings of the National Marine Fisheries Service productivity workshop (Santa Cruz, CA June 11-12, 2012). NOAA Tech. Memo. NMFS-SWFSC-503, 267 p.

## Ocean Governance, Policy & Management Research

Francis, T., P. Levin, A. Punt, I. Kaplan, A. Varney, and K. Norman. 2018. Linking knowledge to action in ocean ecosystem management: The ocean modeling forum. *Elementa-Sci. Anthropocene*, 6(1):83. <https://doi.org/10.1525/elementa.338>.



Breslow, S., B. Sojka, R. Barnea, X. Basurto, C. Carothers, S. Charnley, S. Coulthard, N. Dolsak, J. Donatuto, C. Garcia-Quijano, C. Hicks, A. Levine, M. Mascia, K. Norman, M. Poe, T. Satterfield, K. St. Martin, and P. Levin. 2016. Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. *Environ. Sci. Policy*, 66:250-259. <https://doi.org/10.1016/j.envsci.2016.06.023>.

Levin, P., G. Williams, A. Rehr, K. Norman, and C. Harvey. 2015. Developing conservation targets in social-ecological systems. *Ecol. Soc.*, 20(4):6. <https://doi.org/10.5751/es-07866-200406>.

Wells, B., T. Wainwright, C. Thomson, T. Williams, N. Mantua, L. Crozier, S. Breslow, and K. Fresh. 2014. CCIEA Phase III Report 2013: Ecosystem components, protected species – Pacific salmon. 102 p.

Khanna, M., and C. Speir. 2013. Motivations for proactive environmental management. *Sustainability*, 5(6):2664-2692. <https://doi.org/10.3390/su5062664>.

Morzaria-Luna, H., C. Ainsworth, I. Kaplan, P. Levin, and E. Fulton. 2013. Indirect effects of conservation policies on the coupled human-natural ecosystem of the upper Gulf of California. *PLOS One*, 8(5):e64085. <https://doi.org/10.1371/journal.pone.0064085>.

### Marine Protected Areas Research

Wallmo, K., and R. Kosaka. 2017. Using choice models to inform large marine protected area design. *Mar. Policy*, 83:111-117. <https://doi.org/10.1016/j.marpol.2017.05.034>.

Wallmo, K., and R. Kosaka. 2014. Public preferences for marine protected areas off the U.S. West Coast: The significance of restrictions and size on economic value. *NOAA Tech. Memo. NMFS-F/SPO-144*, 96 p.

Mason, J., R. Kosaka, A. Mamula, and C. Speir. 2012. Effort changes around a marine reserve: The case of the California Rockfish Conservation Area. *Mar. Policy*, 36(5):1054-1063. <https://doi.org/10.1016/j.marpol.2012.03.002>.

### Other Marine Environmental Research

Moore, T., J. Redfern, M. Carver, S. Hastings, J. Adams, and G. Silber. 2018. Exploring ship traffic variability off California. *Ocean Coast. Manage.*, 163:515-527. <https://doi.org/10.1016/j.ocecoaman.2018.03.010>.

Fuller, E., J. Samhouri, J. Stoll, S. Levin, and J. Watson. 2017. Characterizing fisheries connectivity in marine social-ecological systems. *ICES J. Mar. Sci.*, 74(8):2087-2096. <https://doi.org/10.1093/icesjms/fsx128>.

Otto, S., S. Simons, J. Stoll, and P. Lawson. 2016. Making progress on bycatch avoidance in the ocean salmon fishery using a transdisciplinary approach. *ICES J. Mar. Sci.*, 73(9):2380-2394. <https://doi.org/10.1093/icesjms/fsw061>.

Griffiths, J., D. Schindler, J. Armstrong, M. Scheuerell, D. Whited, R. Clark, R. Hilborn, C. Holt, S. Lindley, J. Stanford, and E. Volk. 2014. Performance of salmon fishery portfolios across western North America. *J. Appl. Ecol.*, 51(6):1554-1563. <https://doi.org/10.1111/1365-2664.12341>.

Levin, P., J. Azose, and S. Anderson. 2014. Biblical influences on conservation: An examination of the apparent sustainability of Kosher seafood. *Ecol. Soc.*, 19(2):55. <https://doi.org/10.5751/es-06524-190255>.

Halpern, B., C. Longo, K. McLeod, R. Cooke, B. Fischhoff, J. Samhouri, and C. Scarborough. 2013. Elicited preferences for components of ocean health in the California current. *Mar. Policy*, 42:68-73. <https://doi.org/10.1016/j.marpol.2013.01.019>.

## Ecosystem-Based Management Research

Harvey, C., N. Garfield, G. Williams, K. Andrews, C. Barcelo', K. Barnas, S. Bograd, R. Brodeur, B. Burke, J. Cope, L. deWitt, J. Field, J. Fisher, C. Greene, T. Good, E. Hazen, D. Holland, M. Jacox, S. Kasperski, S. Kim, A. Leising, S. Melin, C. Morgan, S. Munsch, K. Norman, W. Peterson, M. Poe, J. Samhour, I. Schroeder, W. Sydeman, J. Thayer, A. Thompson, N. Tolimieri, A. Varney, B. Wells, T. Williams, and J. Zamon. 2017. Ecosystem status report of the California Current for 2017: A summary of ecosystem indicators compiled by the California Current Integrated Ecosystem Assessment Team (CCIEA). NOAA Tech. Memo. NMFS-NWFSC-139, 61 p. <https://doi.org/10.7289/V5/TM-NWFSC-139>.

Miller, R., J. Field, J. Santora, M. Monk, R. Kosaka, and C. Thomson. 2017. Spatial valuation of California marine fisheries as an ecosystem service. *Can. J. Fish. Aquat. Sci.*, 74(11):1732-1748. <https://doi.org/10.1139/cjfas-2016-0228>.

## Recreational Fisheries Economics Research

Anderson, L., and M. Plummer. 2017. Recreational demand for shellfish harvesting under environmental closures. *Mar. Resour. Econ.*, 32(1):43-57. <https://doi.org/10.1086/688975>.

Bellquist, L., B. Semmens, S. Stohs, and A. Siddall. 2017. Impacts of recently implemented recreational fisheries regulations on the Commercial Passenger Fishing Vessel fishery for Paralabrax sp. in California. *Mar. Policy*, 86:134-143. <https://doi.org/10.1016/j.marpol.2017.09.017>.

Hilger, J., and S. Lovell. 2017. An economic profile of the charter fishing fleet in California. *Mar. Fish. Rev.*, 79(3-4):26-33. <https://doi.org/10.7755/MFR.79.3-4.3>.

Anderson, L., and S. Lee. 2013. Untangling the recreational value of wild and hatchery salmon. *Mar. Resour. Econ.*, 28(2):175-197. <https://doi.org/10.5950/0738-1360-28.2.175>.

Anderson, L., S. Lee, and P. Levin. 2013. Costs of delaying conservation: Regulations and the recreational values of exploited and co-occurring species. *Land Econ.*, 89(2):371-385. <https://doi.org/10.3368/le.89.2.371>.

Kuriyama, K., J. Hilger, and M. Hanemann. 2013. A random parameter model with onsite sampling for recreation site choice: An application to Southern California shoreline sportfishing. *Environ. Resource Econ.*, 56(4):481-497. <https://doi.org/10.1007/s10640-013-9640-4>.

## Habitat Economics Research

Elbakidze, L., B. Fa'anunu, A. Mamula, and R. Taylor. 2017. Evaluating economic efficiency of a water buyback program: The Klamath irrigation project. *Resource Energy Econ.*, 48:68-82. <https://doi.org/10.1016/j.reseneeco.2017.02.001>.

Speir, C., A. Mamula, and D. Ladd. 2015. Effects of water supply on labor demand and agricultural production in California's San Joaquin Valley. *Water Econ. Policy*, 1(2):1550003. <https://doi.org/10.1142/s2382624x15500034>.

## Sociocultural Fisheries Research

Ritzman, J., A. Brodbeck, S. Brostrom, S. McGrew, S. Dreyer, T. Klinger, and S. Moore. 2018. Economic and socio-cultural impacts of fisheries closures in two fishing-dependent communities following the massive 2015 US West Coast harmful algal bloom. *Harmful Algae*, 80:35-45. <https://doi.org/10.1016/j.hal.2018.09.002>.

Calhoun, S., F. Conway, and S. Russell. 2016. Acknowledging the voice of women: Implications for fisheries management and policy. *Mar. Policy*, 74:292-299. <https://doi.org/10.1016/j.marpol.2016.04.033>.

Norman, K., T. Safford, B. Feist, and M. Henly. 2016. At the confluence of data streams: Mapping paired social and biophysical landscapes on the Puget Sound's edge. *Coast. Manage.*, 44(5):427-440. <https://doi.org/10.1080/08920753.2016.1208038>.

Poe, M., J. Donatuto, and T. Satterfield. 2016. "Sense of place": Human wellbeing considerations for ecological restoration in Puget Sound. *Coast. Manage.*, 44(5):409-426. <https://doi.org/10.1080/08920753.2016.1208037>.

Russell, S., A. Arias-Arthur, K. Sparks, and A. Varney. 2016. West Coast communities and catch shares: The early years of social change. *Coast. Manage.*, 44(5):441-451. <https://doi.org/10.1080/08920753.2016.1208864>.

Poe, M., P. Levin, N. Tolimieri, and K. Norman. 2015. Subsistence fishing in a 21st century capitalist society: From commodity to gift. *Ecolog. Econ.*, 116:241-250. <https://doi.org/10.1016/j.ecolecon.2015.05.003>.

Sawchuk, J., A. Beaudreau, D. Tonnes, and D. Fluharty. 2015. Using stakeholder engagement to inform endangered species management and improve conservation. *Mar. Policy*, 54:98-107. <https://doi.org/10.1016/j.marpol.2014.12.014>.

Breslow, S., D. Holland, P. Levin, K. Norman, M. Poe, C. Thomson, R. Barnea, P. Dalton, N. Dolsak, C. Greene, K. Hoelting, S. Kasperski, R. Kosaka, D. Ladd, A. Mamula, S. Miller, B. Sojka, C. Speir, S. Steinback, and N. Tolimieri. 2014. Human dimensions of the CCIEA. In *California Current Integrated Ecosystem Assessment: Phase III Report*. (P. Levin, B. Wells, and M. Sheer, eds.), 37 p.

Holland, D., and S. Kasperski. 2014. Fishery income diversification and risk for fishermen and fishing communities of the US West Coast and Alaska. In *California Current Integrated Ecosystem Assessment: Phase III Report*. (P. Levin, B. Wells, and M. Sheer, eds.).

Safford, T., K. Norman, M. Henly, K. Mills, and P. Levin. 2014. Environmental awareness and public support for protecting and restoring Puget Sound. *Environ. Manage.*, 53(4):757-768. <https://doi.org/10.1007/s00267-014-0236-8>.

## Protected Resources Economics Research

Richerson, K., and D. Holland. 2017. Quantifying and predicting responses to a US West Coast salmon fishery closure. *ICES J. Mar. Sci.*, 74(9):2364-2378. <https://doi.org/10.1093/icesjms/fsx093>.

Gjertsen, H., D. Squires, P. Dutton, and T. Eguchi. 2014. Cost-effectiveness of alternative conservation strategies with application to the Pacific leatherback turtle. *Conserv. Biol.*, 28(1):140-149. <https://doi.org/10.1111/cobi.12239>.

## WESTERN PACIFIC

### Commercial Fisheries Economics Research

Ayers, A., J. Hospital, and C. Boggs. 2018. Bigeye tuna catch limits lead to differential impacts for Hawai'i longliners. *Mar. Policy*, 94:93-105. <https://doi.org/10.1016/j.marpol.2018.04.032>.

Chan, H., and M. Pan. 2017. Economic and social characteristics of the Hawaii small boat fishery 2014. NOAA Tech. Memo. NMFS-PIFSC-63, 107 p. <https://doi.org/10.7289/V5/TM-PIFSC-63>.

Pan, M., S. Arita, and K. Bigelow. 2017. Cost-earnings study of the American Samoa longline fishery based on vessel operations in 2009 and recent trend of economic performance. National Marine Fisheries Services, Pacific Islands Fisheries Science Center. Administration Report H-17-01, 32 p. <https://doi.org/10.7289/V5/AR->

PIFSC-H-17-01.

Sweeney, J., R. Howitt, H. Chan, *M. Pan*, and *P. Leung*. 2017. How do fishery policies affect Hawaii's longline fishing industry? Calibrating a positive mathematical programming model. *Nat. Resour. Model.*, 30(2):e12127. <https://doi.org/10.1111/nrm.12127>.

Kalberg, K., and *M. Pan*. 2016. 2012 economic cost earnings of pelagic longline fishing in Hawaii. NOAA Tech. Memo. NMFS-PIFSC-56, 60 p. <https://doi.org/10.7289/V5/TM-PIFSC-56>.

Richmond, L., *D. Kotowicz*, and *J. Hospital*. 2015. Monitoring socioeconomic impacts of Hawai'i's 2010 bigeye tuna closure: Complexities of local management in a global fishery. *Ocean Coast. Manage.*, 106:87-96. <https://doi.org/10.1016/j.ocecoaman.2015.01.015>.

*Hospital, J.*, and C. Beavers. 2014. Catch shares and the main Hawaiian Islands bottomfish fishery: Linking fishery conditions and fisher perceptions. *Mar. Policy*, 44:9-17. <https://doi.org/10.1016/j.marpol.2013.08.006>.

*Arita, S.*, *M. Pan*, *J. Hospital*, and *P. Leung*. 2013. The distributive economic impacts of Hawaii's commercial fishery: A SAM analysis. *Fish. Res.*, 145:82-89. <https://doi.org/10.1016/j.fishres.2013.02.005>.

## Ecosystem-Based Management Research

*Weijerman, M.*, C. Grace-McCaskey, S. Grafeld, D. Kotowicz, K. Oleson, and I. van Putten. 2016. Towards an ecosystem-based approach of Guam's coral reefs: The human dimension. *Mar. Policy*, 63:8-17. <https://doi.org/10.1016/j.marpol.2015.09.028>.

## Recreational Fisheries Economics Research

Grafeld, S., K. Oleson, M. Barnes, M. Peng, C. Chan, and *M. Weijerman*. 2016. Divers' willingness to pay for improved coral reef conditions in Guam: An untapped source of funding for management and conservation? *Ecolog. Econ.*, 128:202-213. <https://doi.org/10.1016/j.ecolecon.2016.05.005>.

Madge, L., *J. Hospital*, and E. Williams. 2016. Attitudes and preferences of Hawaii non-commercial fishermen. Volume 1: Report from the 2015 Hawaii saltwater recreational fishing survey. NOAA Tech. Memo. NMFS-PIFSC-58, 85 p. <https://doi.org/10.7289/V5/TM-PIFSC-58>.

## Sociocultural Fisheries Research

Kotowicz, D., L. Richmond, and *J. Hospital*. 2017. Exploring public knowledge, attitudes, and perceptions of the Marianas Trench Marine National Monument. *Coast. Manage.*, 45(6):452-469. <https://doi.org/10.1080/08920753.2017.1373451>.

Barnes, M., K. Kalberg, *M. Pan*, and *P. Leung*. 2016. When is brokerage negatively associated with economic benefits? Ethnic diversity, competition, and common-pool resources. *Social Netwks.*, 45:55-65. <https://doi.org/10.1016/j.socnet.2015.11.004>.

Barnes-Mauthe, M., *S. Arita*, *S. Allen*, S. Gray, and *P. Leung*. 2013. The influence of ethnic diversity on social network structure in a common-pool resource system: Implications for collaborative management. *Ecol. Soc.*, 18(1):23. <https://doi.org/10.5751/es-05295-180123>.

## Protected Resources Economics Research

*Chan, H.*, and *M. Pan*. 2016. Spillover effects of environmental regulation for sea turtle protection in the Hawaii longline swordfish fishery. *Mar. Resour. Econ.*, 31(3):259-279. <https://doi.org/10.1086/686672>.

### NEW ENGLAND

#### Climate Change Research

Clay, P., L. Colburn, and T. Seara. 2016. Social bonds and recovery: An analysis of Hurricane Sandy in the first year after landfall. *Mar. Policy*, 74:334-340. <https://doi.org/10.1016/j.marpol.2016.04.049>.

Colburn, L., M. Jepson, C. Weng, T. Seara, J. Weiss, and J. Hare. 2016. Indicators of climate change and social vulnerability in fishing dependent communities along the Eastern and Gulf Coasts of the United States. *Mar. Policy*, 74:323-333. <https://doi.org/10.1016/j.marpol.2016.04.030>.

Seara, T., P. Clay, and L. Colburn. 2016. Perceived adaptive capacity and natural disasters: A fisheries case study. *Global Environ. Change (A Hum. Policy Dimens.)*, 38:49-57. <https://doi.org/10.1016/j.gloenvcha.2016.01.006>.

#### Commercial Fisheries Economics Research

Ardini, G., and M.-Y. Lee. 2018. Do IFQs in the US Atlantic sea scallop fishery impact price and size? *Mar. Resour. Econ.*, 33(3):263-288. <https://doi.org/10.1086/698199>.

Huang, L., S. Ray, K. Segerson, and J. Walden. 2018. Impact of collective rights-based fisheries management: Evidence from the New England groundfish fishery. *Mar. Resour. Econ.*, 33(2):177-201. <https://doi.org/10.1086/697478>.

Hutniczak, B., and A. Munch. 2018. Fishermen's location choice under spatio-temporal update of expectations. *J. Choice Model*, 28:124-136. <https://doi.org/10.1016/j.jocm.2018.05.002>.

Murphy, T., G. Ardini, M. Vasta, A. Kitts, C. Demarest, J. Walden, and D. Caless. 2018. 2015 Final report on the performance of the northeast multispecies (groundfish) fishery (May 2007 – April 2016). National Marine Fisheries Service, Northeast Fisheries Science Center. Reference Document 18-13, 128 p.

Scheld, A., and J. Walden. 2018. An analysis of fishing selectivity for Northeast US multispecies bottom trawlers. *Mar. Resour. Econ.*, 33(4):331-350. <https://doi.org/10.1086/699712>.

Färe, R., S. Grosskopf, and J. Walden. 2017. Measuring capital value in a commercial fishery: A distance function approach. *Mar. Policy*, 81:109-115. <https://doi.org/10.1016/j.marpol.2017.02.014>.

Georgianna, D., M.-Y. Lee, and J. Walden. 2017. Contrasting trends in the Northeast United States groundfish and scallop processing industries. *Mar. Policy*, 85:100-106. <https://doi.org/10.1016/j.marpol.2017.08.025>.

Muench, A., G. DePiper, and C. Demarest. 2017. On the precision of predicting fishing location using data from the vessel monitoring system (VMS). *Can. J. Fish. Aquat. Sci.*, 75(7):1036-1047. <https://doi.org/10.1139/cjfas-2016-0446>.

Oliveira, M., A. Camanho, J. Walden, V. Miguéis, N. Ferreira, and M. Gaspar. 2017. Forecasting bivalve landings with multiple regression and data mining techniques: The case of the Portuguese artisanal dredge fleet. *Mar. Policy*, 84:110-118. <https://doi.org/10.1016/j.marpol.2017.07.013>.

Walden, J., R. Färe, and S. Grosskopf. 2017. Measuring change in productivity of a fishery with the Bennet-Bowley indicator. *Fish. Bull.*, 115(3):273-283. <https://doi.org/10.7755/FB.115.3.1>.

- Das, C. 2016. Fisheries annual fixed cost data collection and estimation methodology: An application in the Northeast, US. *Mar. Policy*, 71:184-193. <https://doi.org/10.1016/j.marpol.2016.05.030>.
- Palmer, M., J. Deroba, C. Legault, and E. Brooks. 2016. Comment on "Slow adaptation in the face of rapid warming leads to collapse of the Gulf of Maine cod fishery". *Science*, 352(6284):423. <https://doi.org/10.1126/science.aad9674>.
- Holland, D., P. Pinto da Silva, and A. Kitts. 2015. Evolution of social capital and economic performance in New England harvest cooperatives. *Mar. Resour. Econ.*, 30(4):371-392. <https://doi.org/10.1086/682153>.
- Murphy, T., A. Kitts, C. Demarest, and J. Walden. 2015. 2013 Final report on the performance of the northeast multispecies (groundfish) fishery (May 2013 -April 2014). National Marine Fisheries Science, Northeast Fisheries Science Center. Reference Document 15-02, 106 p. <https://doi.org/10.7289/V5XS5SB9>.
- Thunberg, E., and S. Correia. 2015. Measures of fishing fleet diversity in the New England groundfish fishery. *Mar. Policy*, 58:6-14. <https://doi.org/10.1016/j.marpol.2015.04.005>.
- Thunberg, E., and M.-Y. Lee. 2015. The effort control program in the Northeast United States groundfish fishery. In *Effort rights in fisheries management: General principles and case studies from around the world*. 17–20 September 2012, Bilbao, Spain (D. Squires, M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson, eds.), p. 215-234. Food and Agriculture Organization of the United Nations, Rome.
- Clay, P., A. Kitts, and P. Pinto da Silva. 2014. Measuring the social and economic performance of catch share programs: Definition of metrics and application to the US Northeast Region groundfish fishery. *Mar. Policy*, 44:27-36. <https://doi.org/10.1016/j.marpol.2013.08.009>.
- Lee, M.-Y. 2014. Hedonic pricing of Atlantic cod: Effects of size, freshness, and gear. *Mar. Resour. Econ.*, 29(3):259-277. <https://doi.org/10.1086/677769>.
- Murphy, T., A. Kitts, D. Records, C. Demarest, D. Caless, J. Walden, and S. Benjamin. 2014. 2012 final report on the performance of the northeast multispecies (groundfish) fishery (May 2012-April 2013). National Marine Fisheries Service, Northeast Fisheries Science Center. Reference Document 14-01, 111 p. <https://doi.org/10.7289/V5S-F2T63>.
- Walden, J., and N. Kitts. 2014. Measuring fishery profitability: An index number approach. *Mar. Policy*, 43:321-326. <https://doi.org/10.1016/j.marpol.2013.07.002>.
- Holland, D., A. Kitts, P. Pinto da Silva, and J. Wiersma. 2013. Social capital and the success of harvest cooperatives in the New England groundfish fishery. *Mar. Resour. Econ.*, 28(2):133-153. <https://doi.org/10.5950/0738-1360-28.2.133>.
- Lee, M.-Y., and E. Thunberg. 2013. An inverse demand system for New England groundfish: Welfare analysis of the transition to catch share management. *Am. J. Agric. Econ.*, 95(5):1178-1195. <https://doi.org/10.1093/ajae/aat061>.
- Walden, J. 2013. Economic health of the northeast (U.S.) multispecies trawl fleet 1996–2010. *Fish. Res.*, 139:98-104. <https://doi.org/10.1016/j.fishres.2012.10.002>.



### Other Marine Environmental Research

Benjamin, S., M.-Y. Lee, and G. DePiper. 2018. Visualizing fishing data as rasters. National Marine Fisheries Service, Northeast Fisheries Science Center. Reference Document 18-12, 24 p.

DePiper, G. 2014. Statistically assessing the precision of self-reported VTR fishing locations. NOAA Tech. Memo. NMFS-NE-229, 22 p. <https://doi.org/10.7289/V53F4MJN>.

### Ecosystem-Based Management Research

DePiper, G., S. Gaichas, S. Lucey, P. Pinto da Silva, M. Anderson, H. Breeze, A. Bundy, P. Clay, G. Fay, R. Gamble, R. Gregory, P. Fratantoni, C. Johnson, M. Koen-Alonso, K. Kleisner, J. Olson, C. Perretti, P. Pepin, F. Phelan, V. Saba, L. Smith, J. Tam, N. Templeman, and R. Wildermuth. 2017. Operationalizing integrated ecosystem assessments within a multidisciplinary team: Lessons learned from a worked example. ICES J. Mar. Sci., 74(8):2076-2086. <https://doi.org/10.1093/icesjms/fsx038>.

Jin, D., G. DePiper, and P. Hoagland. 2016. Applying portfolio management to implement ecosystem-based fishery management (EBFM). North Am. J. Fish. Manage., 36(3):652-669. <https://doi.org/10.1080/02755947.2016.1146180>.

Wiedenmann, J., J. Wilen, P. Levin, M. Plummer, and M. Mangel. 2016. A framework for exploring the role of bioeconomics on observed fishing patterns and ecosystem dynamics. Coast. Manage., 44(5):529-546. <https://doi.org/10.1080/08920753.2016.1208886>.

### Recreational Fisheries Economics Research

Lee, M.-Y., S. Steinback, and K. Wallmo. 2017. Applying a bioeconomic model to recreational fisheries management: Groundfish in the northeast United States. Mar. Resour. Econ., 32(2):191-216. <https://doi.org/10.1086/690676>.

### Sociocultural Fisheries Research

Stoll, J., P. Pinto da Silva, J. Olson, and S. Benjamin. 2015. Expanding the 'geography' of resilience in fisheries by bringing focus to seafood distribution systems. Ocean Coast. Manage., 116:185-192. <https://doi.org/10.1016/j.ocecoaman.2015.07.019>.

Johnson, T., A. Henry, and C. Thompson. 2014. Qualitative indicators of social resilience in small-scale fishing communities: An emphasis on perceptions and practice. Hum. Ecol. Rev., 20(2):97-115.

Jepson, M., and L. Colburn. 2013. Development of social indicators of fishing community vulnerability and resilience in the U.S. Southeast and Northeast regions. NOAA Tech. Memo. NMFS-F/SPO-129, 64 p.

### Protected Resources Economics Research

Bisack, K., and C. Das. 2015. Understanding non-compliance with protected species regulations in the Northeast USA gillnet fishery. Front. Mar. Sci., 2(91):1-11. <https://doi.org/10.3389/fmars.2015.00091>.

Bisack, K., and G. Magnusson. 2014. Measuring the economic value of increased precision in scientific estimates of marine mammal abundance and bycatch: Harbor porpoise *Phocoena phocoena* in the Northeast U.S. gill-net fishery. North Am. J. Fish. Manage., 34(2):311-321. <https://doi.org/10.1080/02755947.2013.869281>.

## MID-ATLANTIC

### Commercial Fisheries Economics Research

Holzer, J., G. DePiper, and D. Lipton. 2017. Buybacks with costly participation. *J. Environ. Econ. Manage.*, 85:130-145. <https://doi.org/10.1016/j.jeem.2017.05.001>.

DePiper, G. 2015. To bid or not to bid: The role of participation rates in conservation auction outcomes. *Am. J. Agric. Econ.*, 97(4):1157-1174. <https://doi.org/10.1093/ajae/aav017>.

Färe, R., S. Grosskopf, and J. Walden. 2015. Productivity change and fleet restructuring after transition to individual transferable quota management. *Mar. Policy*, 62:318-325. <https://doi.org/10.1016/j.marpol.2015.05.015>.

Huang, P., R. Woodward, M. Wilberg, and D. Tomberlin. 2015. Management evaluation for the Chesapeake Bay blue crab fishery: An integrated bioeconomic approach. *North Am. J. Fish. Manage.*, 35(2):216-228. <https://doi.org/10.1080/02755947.2014.986342>.

DePiper, G., N. Higgins, D. Lipton, and A. Stocking. 2013. Auction design, incentives, and buying back Maryland and Virginia crab licenses. *Can. J. Agr. Econ.*, 61(2):353-370. <https://doi.org/10.1111/cjag.12005>.

### Ecosystem-Based Management Research

Gaichas, S., G. DePiper, R. Seagraves, B. Muffley, M. Sabo, L. Colburn, and A. Loftus. 2018. Implementing ecosystem approaches to fishery management: Risk assessment in the US Mid-Atlantic. *Front. Mar. Sci.*, 5:442. <https://doi.org/10.3389/fmars.2018.00442>.

DePiper, G., D. Lipton, and R. Lipcius. 2017. Valuing ecosystem services: Oysters, denitrification, and nutrient trading programs. *Mar. Resour. Econ.*, 32(1):1-20. <https://doi.org/10.1086/688976>.

Gaichas, S., R. Seagraves, J. Coakley, G. DePiper, V. Guida, J. Hare, P. Rago, and M. Wilberg. 2016. A framework for incorporating species, fleet, habitat, and climate interactions into fishery management. *Front. Mar. Sci.*, 3:105. <https://doi.org/10.3389/fmars.2016.00105>.

### Recreational Fisheries Economics Research

Hutt, C., S. Lovell, and G. Silva. 2014. The economic contribution of Atlantic highly migratory species angling permit holders in New England and the Mid-Atlantic, 2011. NOAA Tech. Memo. NMFS-F/SPO-147, 34 p.

### Sociocultural Fisheries Research

Freitag, A., B. Vogt, and T. Hartley. 2018. Breaking stereotypes through network analysis of the Chesapeake oyster community. *Mar. Policy*, 90:146-151. <https://doi.org/10.1016/j.marpol.2017.12.023>.

### Habitat Economics Research

Nicosia, K., S. Daaram, B. Edelman, L. Gedrich, E. He, S. McNeilly, V. Shenoy, A. Velagapudi, W. Wu, L. Zhang, A. Barvalia, V. Bokka, B. Chan, J. Chiu, S. Dhulipalla, V. Hernandez, J. Jeon, P. Kanukollu, P. Kravets, A. Mantha, C. Miranda, V. Nigam, M. Patel, S. Praveen, T. Sang, S. Upadhyay, T. Varma, C. Xu, B. Yalamanchi, M. Zharova, A. Zheng, R. Verma, J. Vasslides, J. Manderson, R. Jordan, and S. Gray. 2014. Determining the willingness to pay for ecosystem service restoration in a degraded coastal watershed: A ninth grade investigation. *Ecolog. Econ.*, 104:145-151. <https://doi.org/10.1016/j.ecolecon.2014.02.010>.

### SOUTH ATLANTIC

#### Commercial Fisheries Economics Research

Crosson, S. 2016. The Affordable Care Act and opportunities for change in North Carolina's commercial fisheries. *Mar. Resour. Econ.*, 31(2):121-129. <https://doi.org/10.1086/685099>.

Crosson, S. 2015. Anticipating exit from North Carolina's commercial fisheries. *Soc. Nat. Resour.*, 28(7):797-806. <https://doi.org/10.1080/08941920.2014.970737>.

Yandle, T., and S. Crosson. 2015. Whatever happened to the wreckfish fishery? An evaluation of the oldest finfish ITQ program in the United States. *Mar. Resour. Econ.*, 30(2):193-217. <https://doi.org/10.1086/679974>.

Crosson, S., T. Yandle, and B. Stoffle. 2013. Renegotiating property rights in the Florida golden crab fishery. *Int. J. Commons*, 7(2):521-548. <https://doi.org/10.18352/ijc.385>.

#### Recreational Fisheries Economics Research

Carter, D., A. Marvasti, C. Liese, and S. Crosson. 2016. Valuing sportfishing harvest with the demand for boat fuel. *Mar. Resour. Econ.*, 31(3):323-338. <https://doi.org/10.1086/686580>.

Shideler, G., D. Carter, C. Liese, and J. Serafy. 2015. Lifting the goliath grouper harvest ban: Angler perspectives and willingness to pay. *Fish. Res.*, 161:156-165. <https://doi.org/10.1016/j.fishres.2014.07.009>.

### GULF OF MEXICO

#### Commercial Fisheries Economics Research

Watson, J., A. Haynie, P. Sullivan, L. Perruso, S. O'Farrell, J. Sanchirico, and F. Mueter. 2018. Vessel monitoring systems (VMS) reveal an increase in fishing efficiency following regulatory changes in a demersal longline fishery. *Fish. Res.*, 207:85-94. <https://doi.org/10.1016/j.fishres.2018.06.006>.

Marvasti, A. 2017. Determinants of the risk of accidents in the Gulf of Mexico commercial fisheries. *Ocean Coast. Manage.*, 148:282-287. <https://doi.org/10.1016/j.ocecoaman.2017.08.018>.

Marvasti, A., and S. Dakhli. 2017. Occupational safety and the shift from common to individual fishing quotas in the Gulf of Mexico. *Southern Econ. J.*, 83(3):705-720. <https://doi.org/10.1002/soej.12154>.

O'Farrell, S., J. Sanchirico, I. Chollett, M. Cockrell, S. Murawski, J. Watson, A. Haynie, A. Strelcheck, and L. Perruso. 2017. Improving detection of short-duration fishing behaviour in vessel tracks by feature engineering of training data. *ICES J. Mar. Sci.*, 74(5):1428-1436. <https://doi.org/10.1093/icesjms/fsw244>.

Purcell, K., J. Craig, J. Nance, M. Smith, and L. Benneer. 2017. Fleet behavior is responsive to a large-scale environmental disturbance: Hypoxia effects on the spatial dynamics of the northern Gulf of Mexico shrimp fishery. *PLOS One*, 12(8):e0183032. <https://doi.org/10.1371/journal.pone.0183032>.

Marvasti, A., and A. Lamberte. 2016. Commodity price volatility under regulatory changes and disaster. *J. Empirical Finance*, 38:355-361. <https://doi.org/10.1016/j.jempfin.2016.07.008>.

Karnauskas, M., M. Schirripa, J. Craig, G. Cook, C. Kelble, J. Agar, B. Black, D. Enfield, D. Lindo-Atichati, B. Muhling, K. Purcell, P. Richards, and C. Wang. 2015. Evidence of climate-driven ecosystem reorganization in the Gulf of Mexico. *Glob. Change. Biol.*, 21(7):2554-2568. <https://doi.org/10.1111/gcb.12894>.

Solis, D., J. Agar, and J. del Corral. 2015. IFQs and total factor productivity changes: The case of the Gulf of Mexico red snapper fishery. *Mar. Policy*, 62:347-357. <https://doi.org/10.1016/j.marpol.2015.06.001>.

Solís, D., J. del Corral, L. Perruso, and J. Agar. 2015. Individual fishing quotas and fishing capacity in the US Gulf of Mexico red snapper fishery. *Australian J. Agr. Resource Econ.*, 59(2):288-307. <https://doi.org/10.1111/1467-8489.12061>.

Agar, J., and D. Carter. 2014. Are the 2012 allocations of gag, red, and black grouper in the Gulf of Mexico economically efficient? NOAA Tech. Memo. NMFS-SEFSC-660, 40 p. <https://doi.org/10.7289/V5ZW1HVJ>.

Agar, J., and D. Carter. 2014. Is the 2012 allocation of red snapper in the Gulf of Mexico economically efficient? NOAA Tech. Memo. NMFS-SEFSC-659, 32 p. <https://doi.org/10.7289/V53N21B7>.

Agar, J., J. Stephen, A. Strelcheck, and A. Diagne. 2014. The Gulf of Mexico red snapper IFQ program: The first five years. *Mar. Resour. Econ.*, 29(2):177-198. <https://doi.org/10.1086/676825>.

Marvasti, A. 2014. Crew injuries and fatalities, employment estimates, and casualty rates in the Gulf of Mexico commercial fisheries. NOAA Tech. Memo. NMFS-SEFSC-656, 17 p. <https://doi.org/10.7289/V56T0JKG>.

Solís, D., J. del Corral, L. Perruso, and J. Agar. 2014. Evaluating the impact of individual fishing quotas (IFQs) on the technical efficiency and composition of the US Gulf of Mexico red snapper commercial fishing fleet. *Food Pol.*, 46:74-83. <https://doi.org/10.1016/j.foodpol.2014.02.005>.

Solís, D., L. Perruso, J. del Corral, B. Stoffle, and D. Letson. 2013. Measuring the initial economic effects of hurricanes on commercial fish production: The US Gulf of Mexico grouper (Serranidae) fishery. *Nat. Hazards*, 66(2):271-289. <https://doi.org/10.1007/s11069-012-0476-y>.

## Other Marine Environmental Research

Farrow, K., A. Brinson, K. Wallmo, and D. Lew. 2016. Environmental attitudes in the aftermath of the Gulf Oil Spill. *Ocean Coast. Manage.*, 119:128-134. <https://doi.org/10.1016/j.ocecoaman.2015.10.001>.

## Ecosystem-Based Management Research

Gruss, A., K. Rose, J. Simons, C. Ainsworth, E. Babcock, D. Chagaris, K. De Mutsert, J. Froeschke, P. Himchak, I. Kaplan, H. O'Farrell, and M. Rejon. 2017. Recommendations on the use of ecosystem modeling for informing ecosystem-based fisheries management and restoration outcomes in the Gulf of Mexico. *Mar. Coast. Fish.*, 9(1):281-295. <https://doi.org/10.1080/19425120.2017.1330786>.

Karnauskas, M., C. Kelble, S. Regan, C. Quenée, R. Allee, M. Jepson, A. Freitag, J. Craig, C. Carollo, L. Barbero, N. Trifonova, D. Hanisko, and G. Zapfe. 2017. 2017 Ecosystem status report update for the Gulf of Mexico. NOAA Tech. Memo. NMFS-SEFSC-706, 51 p.

## Recreational Fisheries Economics Research

Carter, D., S. Crosson, and C. Liese. 2015. Nowcasting intraseasonal recreational fishing harvest with internet search volume. *PLOS One*, 10(9):e0137752. <https://doi.org/10.1371/journal.pone.0137752>.

## Sociocultural Fisheries Research

Blount, B., S. Jacob, P. Weeks, and M. Jepson. 2015. Testing cognitive ethnography: Mixed-methods in developing indicators of well-being in fishing communities. *Hum. Org.*, 74(1):1-15. <https://doi.org/10.17730/humo.74.1.665ww120082h561l>.

Jacob, S., P. Weeks, B. Blount, and M. Jepson. 2013. Development and evaluation of social indicators of vulnerability and resiliency for fishing communities in the Gulf of Mexico. *Mar. Policy*, 37:86-95. <https://doi.org/10.1016/j.marpol.2012.04.014>.

## CARIBBEAN

### Commercial Fisheries Economics Research

Agar, J., M. Shivilani, and D. Solis. 2017. The commercial trap fishery in the Commonwealth of Puerto Rico: An economic, social, and technological profile. *North Am. J. Fish. Manage.*, 37(4):778-788. <https://doi.org/10.1080/02755947.2017.1317678>.

Fleming, C., F. Tonioli, and J. Agar. 2014. A review of principal coastal economic sectors within the southeast United States and the U.S. Caribbean. NOAA Tech. Memo. NMFS-SEFSC-669, 44 p. <https://doi.org/10.7289/V5J10135>.

### Habitat Economics Research

Fitzpatrick, L., C. Parmeter, and J. Agar. 2017. Threshold effects in meta-analyses with application to benefit transfer for coral reef valuation. *Ecolog. Econ.*, 133:74-85. <https://doi.org/10.1016/j.ecolecon.2016.11.015>.

## INTERNATIONAL

### Climate Change Research

Melnikov, N., B. O'Neill, M. Dalton, and B. van Ruijven. 2017. Downscaling heterogeneous household outcomes in dynamic CGE models for energy-economic analysis. *Energy Econ.*, 65:87-97. <https://doi.org/10.1016/j.eneco.2017.04.023>.

McLeod, E., B. Szuster, J. Hinkel, E. Tompkins, N. Marshall, T. Downing, S. Wongbusarakum, A. Patwardhan, M. Hamza, C. Anderson, S. Bharwani, L. Hansen, and P. Rubinoff. 2016. Conservation organizations need to consider adaptive capacity: Why local input matters. *Conserv. Lett.*, 9(5):351-360. <https://doi.org/10.1111/conl.12210>.

McLeod, E., B. Szuster, E. Tompkins, N. Marshall, T. Downing, S. Wongbusarakum, A. Patwardhan, M. Hamza, C. Anderson, S. Bharwani, L. Hansen, and P. Rubinoff. 2015. Using expert knowledge to develop a vulnerability and adaptation framework and methodology for application in tropical island communities. *Coast. Manage.*, 43(4):365-382. <https://doi.org/10.1080/08920753.2015.1046803>.

Wongbusarakum, S., M. Gombos, B. Parker, C. Courtney, S. Atkinson, and W. Kostka. 2015. The Local Early Action Planning (LEAP) tool: Enhancing community-based planning for a changing climate. *Coast. Manage.*, 43(4):383-393. <https://doi.org/10.1080/08920753.2015.1046805>.

### Commercial Fisheries Economics Research

Geronimo, R., E. Franklin, R. Brainard, C. Elvidge, M. Santos, R. Venegas, and C. Mora. 2018. Mapping fishing activities and suitable fishing grounds using nighttime satellite images and maximum entropy modelling. *Remote Sens.*, 10(10):1604. <https://doi.org/10.3390/rs10101604>.

Guillotreau, P., D. Squires, J. Sun, and G. Compeán. 2017. Local, regional and global markets: What drives the tuna fisheries? *Rev. Fish Biol. Fish.*, 27(4):909-929. <https://doi.org/10.1007/s11160-016-9456-8>.

Gutierrez, A., and S. Morgan. 2017. Impediments to fisheries sustainability - coordination between public and private fisheries governance systems. *Ocean Coast. Manage.*, 135:79-92. <https://doi.org/10.1016/j.ocecoaman.2016.10.016>.

- Pons, M., T. Branch, M. Melnychuk, O. Jensen, J. Brodziak, J. Fromentin, S. Harley, A. Haynie, L. Kell, M. Maunder, A. Parma, V. Restrepo, R. Sharma, R. Ahrens, and R. Hilborn. 2017. Effects of biological, economic and management factors on tuna and billfish stock status. *Fish Fish.*, 18(1):1-21. <https://doi.org/10.1111/faf.12163>.
- Smith, M., A. Oglend, A. Kirkpatrick, F. Asche, L. Bennear, J. Craig, and J. Nance. 2017. Seafood prices reveal impacts of a major ecological disturbance. *Proc. Natl. Acad. Sci. U. S. A.*, 114(7):1512-1517. <https://doi.org/10.1073/pnas.1617948114>.
- Sun, C., F. Chiang, P. Guillotreau, D. Squires, D. Webster, and M. Owens. 2017. Fewer fish for higher profits? Price response and economic incentives in global tuna fisheries management. *Environ. Resour. Econ.*, 66(4):749-764. <https://doi.org/10.1007/s10640-015-9971-4>.
- Kuriyama, P., T. Branch, M. Bellman, and K. Rutherford. 2016. Catch shares have not led to catch-quota balancing in two North American multispecies trawl fisheries. *Mar. Policy*, 71:60-70. <https://doi.org/10.1016/j.marpol.2016.05.010>.
- Melnichuk, M., T. Essington, T. Branch, S. Heppell, O. Jensen, J. Link, S. Martell, A. Parma, and A. Smith. 2016. Which design elements of individual quota fisheries help to achieve management objectives? *Fish Fish.*, 17(1):126-142. <https://doi.org/10.1111/faf.12094>.
- Oliveira, M., A. Camanho, J. Walden, and M. Gaspar. 2016. Evaluating the influence of skipper skills in the performance of Portuguese artisanal dredge vessels. *ICES J. Mar. Sci.*, 73(10):2721-2728. <https://doi.org/10.1093/icesjms/fsw103>.
- Squires, D., and N. Vestergaard. 2016. Economics of Fisheries. In *Oxford bibliographies in environmental science* (E. Wohl, ed.). Oxford University Press.
- Stemle, A., H. Uchida, and C. Roheim. 2016. Have dockside prices improved after MSC certification? Analysis of multiple fisheries. *Fish. Res.*, 182:116-123. <https://doi.org/10.1016/j.fishres.2015.07.022>.
- Woods, P., D. Holland, and A. Punt. 2016. Evaluating the benefits and risks of species-transformation provisions in multi-species IFQ fisheries with joint production. *ICES J. Mar. Sci.*, 73(7):1764-1773. <https://doi.org/10.1093/icesjms/fsw031>.
- Grafton, R., K. Segerson, and D. Squires. 2015. Promoting green growth in fisheries. In *Protecting the environment privately* (J. Bennett, ed.), p. 63-87. World Scientific Publishing Company, Singapore.
- Squires, D., and M. Maunder. 2015. Synthesis of workshop results: Pros and cons of effort based management. In *Effort rights in fisheries management: General principles and case studies from around the World*. 17-20 September 2012, Bilbao, Spain (D. Squires, M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson, eds.), p. 11-28. Food and Agriculture Organization of the United Nations, Rome.
- Woods, P., C. Bouchard, D. Holland, A. Punt, and G. Marteinsdóttir. 2015. Catch-quota balancing mechanisms in the Icelandic multi-species demersal fishery: Are all species equal? *Mar. Policy*, 55:1-10. <https://doi.org/10.1016/j.marpol.2015.01.004>.
- Woods, P., D. Holland, G. Marteinsdóttir, and A. Punt. 2015. How a catch-quota balancing system can go wrong: An evaluation of the species quota transformation provisions in the Icelandic multispecies demersal fishery. *ICES J. Mar. Sci.*, 72(5):1257-1277. <https://doi.org/10.1093/icesjms/fsv001>.



Holland, D. 2013. Making cents out of barter data from the British Columbia groundfish ITQ market. *Mar. Resour. Econ.*, 28(4):311-330. <https://doi.org/10.5950/0738-1360-28.4.311>.

Squires, D., R. Allen, and V. Restrepo. 2013. Rights-based management in international tuna fisheries. *FAO Fisheries and Aquaculture Technical Paper*. No. 571, 79 p.

Wolff, F.-C., D. Squires, and P. Guillotreau. 2013. The firm's management in production: Management, firm, and time effects in an Indian Ocean tuna fishery. *Am. J. Agric. Econ.*, 95(3):547-567. <https://doi.org/10.1093/ajae/aas140>.

### Ocean Governance, Policy and Management Research

Cinner, J., E. Maire, C. Huchery, M. MacNeil, N. Graham, C. Mora, M. Barnes, J. Kittinger, C. Hicks, S. D'Agata, A. Hoey, G. Gurney, D. Feary, I. Williams, M. Kulbicki, L. Vigliola, L. Wantiez, G. Edgar, R. Stuart-Smith, S. Sandin, A. Green, M. Hardt, M. Beger, A. Friedlander, S. Wilson, E. Brokovich, A. Brooks, J. Cruz-Motta, D. Booth, P. Chabanet, C. Gough, M. Tupper, S. Ferse, U. Sumaila, S. Pardede, and D. Mouillot. 2018. Gravity of human impacts mediates coral reef conservation gains. *Proc. Natl. Acad. Sci. U. S. A.*, 115(27):E6116-E6125. <https://doi.org/10.1073/pnas.1708001115>.

Squires, D., and N. Vestergaard. 2018. Rethinking the commons problem: Technical change, knowledge spillovers, and social learning. *J. Environ. Econ. Manage.*, 91:1-25. <https://doi.org/10.1016/j.jeem.2018.06.011>.

Van Nijen, K., S. Van Passel, and D. Squires. 2018. A stochastic techno-economic assessment of seabed mining of polymetallic nodules in the Clarion Clipperton Fracture Zone. *Mar. Policy*, 95:133-141. <https://doi.org/10.1016/j.marpol.2018.02.027>.

Do Yun, S., B. Hutniczak, J. Abbott, and E. Fenichel. 2017. Ecosystem-based management and the wealth of ecosystems. *Proc. Natl. Acad. Sci. U. S. A.*, 114(25):6539-6544. <https://doi.org/10.1073/pnas.1617666114>.

Lodge, M., K. Segerson, and D. Squires. 2017. Sharing and preserving the resources in the deep sea: Challenges for the international seabed authority. *Int. J. Mar. Coast. Law*, 32(3):427 to 457. <https://doi.org/10.1163/15718085-12323047>.

Mumby, P., J. Sanchirico, K. Broad, M. Beck, P. Tyedmers, M. Morikawa, T. Okey, L. Crowder, E. Fulton, D. Kelso, J. Kley-pas, S. Munch, P. Glynn, K. Matthews, and J. Lubchenco. 2017. Avoiding a crisis of motivation for ocean management under global environmental change. *Glob. Change. Biol.*, 23(11):4483-4496. <https://doi.org/10.1111/gcb.13698>.

Rindorf, A., C. Dichmont, J. Thorson, A. Charles, L. Clausen, P. Degnbol, D. Garcia, N. Hintzen, A. Kempf, P. Levin, P. Mace, C. Maravelias, C. Minto, J. Mumford, S. Pascoe, R. Prelezo, A. Punt, D. Reid, C. Rockmann, R. Stephenson, O. Thebaud, G. Tserpes, and R. Voss. 2017. Inclusion of ecological, economic, social, and institutional considerations when setting targets and limits for multispecies fisheries. *ICES J. Mar. Sci.*, 74(2):453-463. <https://doi.org/10.1093/icesjms/fsw226>.

Squires, D., M. Maunder, R. Allen, P. Andersen, K. Astorkiza, D. Butterworth, G. Caballero, R. Clarke, H. Ellefsen, P. Guillotreau, J. Hampton, R. Hannesson, E. Havice, M. Helvey, S. Herrick Jr., K. Hoydal, V. Maharaj, R. Metzner, I. Mosqueira, A. Parma, I. Prieto-Bowen, V. Restrepo, S. F. Sidique, S. Steinsham, E. Thunberg, I. del Valle, and N. Vestergaard. 2017. Effort rights-based management. *Fish Fish.*, 18(3):440-465. <https://doi.org/10.1111/faf.12185>.

Hicks, C., A. Levine, A. Agrawal, X. Basurto, S. Breslow, C. Carothers, S. Charnley, S. Coulthard, N. Dolsak, J. Donatuto, C. Garcia-Quijano, M. Mascia, K. Norman, M. Poe, T. Satterfield, K. Martin, and P. Levin. 2016. Engage key social concepts for sustainability. *Science*, 352(6281):38-40. <https://doi.org/10.1126/science.aad4977>.

Moore, S., and D. Squires. 2016. Governing the depths: Conceptualizing the politics of deep sea resources. *Global Environ. Politics*, 16(2):101-109. [https://doi.org/10.1162/GLEP\\_a\\_00347](https://doi.org/10.1162/GLEP_a_00347).

Squires, D., M. Maunder, S. Herrick, M. Helvey, and R. Clarke. 2016. Effort rights-based management. In *Effort rights in fisheries management: General principles and case studies from around the world*. 17–20 September 2012, Bilbao, Spain (D. Squires, M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson, eds.), p. 37-78. Food and Agriculture Organization of the United Nations, Rome.

Squires, D., M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson. 2016. Effort rights in fisheries management: General principles and case studies from around the world. In *Effort rights in fisheries management: General principles and case studies from around the world*. 17–20 September 2012, Bilbao, Spain (D. Squires, M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson, eds.), p. 1-10. Food and Agriculture Organization of the United Nations, Rome.

Squires, D., M. Maunder, N. Vestergaard, V. Restrepo, R. Metzner, S. Herrick, R. Hannesson, I. del Valle, and P. Anderson, eds. 2016. *Effort rights in fisheries management: General principles and case studies from around the world*. 17–20 September 2012, Bilbao, Spain. 260 p. Food and Agriculture Organization of the United Nations, Rome.

Grafton, R., and D. Squires. 2015. The economic sustainability paradigm and freshwater and marine fisheries governance. In *Handbook of water economics* (A. Dinar, and K. Schwabe, eds.), p. 199–218. Edward Elgar, Cheltenham, UK.

Squires, D., L. Ballance, R. Deriso, J. Ianelli, M. Maunder, and K. Schaefer. 2015. Comment on 'Scope and compatibility of measures in international fisheries agreements' by Finus and Schneider. *Oxford Econ. Pap.*, 67(4):889-894. <https://doi.org/10.1093/oep/gpv041>.

Mengerink, K., C. Van Dover, J. Ardron, M. Baker, E. Escobar-Briones, K. Gjerd, J. Koslow, E. Ramirez-Llodra, A. Lara-Lopez, D. Squires, T. Sutton, A. Sweetman, and L. Levin. 2014. A call for deep-ocean stewardship. *Science*, 344(6185):696-698. <https://doi.org/10.1126/science.1251458>.

## Marine Protected Areas Research

McDermott, S., L. Buhl-Mortensen, G. Dahle, D. Hart, A. Haynie, T. Johannessen, E. Moksness, E. Olsen, E. Olsen, J. Olson, P. Spencer, and W. Stockhausen. 2017. Lessons on marine protected area management in northern boreal regions from the United States and Norway. *Mar. Fish. Rev.*, 79(1):28 to 51. <https://doi.org/10.7755/MFR.79.1.2>.

## Other Marine Environmental Research

Olsen, E., I. Kaplan, C. Ainsworth, G. Fay, S. Gaichas, R. Gamble, R. Girardin, C. Eide, T. Ihde, H. Morzaria-Luna, K. Johnson, M. Savina-Rolland, H. Townsend, M. Weijerman, E. Fulton, and J. Link. 2018. Ocean futures under ocean acidification, marine protection, and changing fishing pressures explored using a worldwide suite of ecosystem models. *Front. Mar. Sci.*, 5:64. <https://doi.org/10.3389/fmars.2018.00064>.

Higham, J., L. Bejder, S. Allen, P. Corkeron, and D. Lusseau. 2016. Managing whale-watching as a non-lethal consumptive activity. *J. Sustainable Tourism*, 24(1):73-90. <https://doi.org/10.1080/09669582.2015.1062020>.

## Ecosystem-Based Management Research

Holland, D. 2018. Collective rights-based fishery management: A path to ecosystem-based fishery management. *Annu. Rev. Resour. Econ.*, 10(1):469-485. <https://doi.org/10.1146/annurev-resource-100517-023110>.

Milner-Gulland, E., S. Garcia, W. Arlidge, J. Bull, A. Charles, L. Dagorn, S. Fordham, J. Graff Zivin, M. Hall, J. Shrader, N. Vestergaard, C. Wilcox, and D. Squires. 2018. Translating the terrestrial mitigation hierarchy to marine megafauna by-catch. *Fish Fish.*, 19(3):547-561. <https://doi.org/10.1111/faf.12273>.

Squires, D., and S. Garcia. 2018. The least-cost biodiversity impact mitigation hierarchy with a focus on marine fisheries and bycatch issues. *Conserv. Biol.*, 32(5):989-997. <https://doi.org/10.1111/cobi.13155>.

Link, J., O. Thebaud, D. Smith, A. Smith, J. Schmidt, J. Rice, J. Poos, C. Pita, D. Lipton, M. Kraan, S. Frusher, L. Doyen, A. Cudennec, K. Criddle, and D. Bailly. 2017. Keeping humans in the ecosystem. *ICES J. Mar. Sci.*, 74(7):1947-1956. <https://doi.org/10.1093/icesjms/fsx130>.

Maury, O., L. Campling, H. Arrizabalaga, O. Aumont, L. Bopp, G. Merino, D. Squires, W. Cheung, M. Goujon, C. Guivarch, S. Lefort, F. Marsac, P. Monteagudo, R. Murtugudde, H. Österblom, J. Pulvenis, Y. Ye, and B. van Ruijven. 2017. From shared socio-economic pathways (SSPs) to oceanic system pathways (OSPs): Building policy-relevant scenarios for global oceanic ecosystems and fisheries. *Global Environ. Change*, 45:203-216. <https://doi.org/10.1016/j.gloenvcha.2017.06.007>.

Payne, M., A. Hobday, B. MacKenzie, D. Tommasi, D. Dempsey, S. Fässler, A. Haynie, R. Ji, G. Liu, P. Lynch, D. Matei, A. Miesner, K. Mills, K. Strand, and E. Villarino. 2017. Lessons from the first generation of marine ecological forecast products. *Front. Mar. Sci.*, 4:289. <https://doi.org/10.3389/fmars.2017.00289>.

Rindorf, A., C. Dichmont, P. Levin, P. Mace, S. Pascoe, R. Pallezo, A. Punt, D. Reid, R. Stephenson, C. Ulrich, M. Vinther, and L. Clausen. 2017. Food for thought: Pretty good multispecies yield. *ICES J. Mar. Sci.*, 74(2):475-486. <https://doi.org/10.1093/icesjms/fsw071>.

### Recreational Fisheries Economics Research

Seung, C., and D. Kim. 2018. Developing confidence intervals for economic impacts: A multi-regional analysis of a recreational fishery in Korea. *Mar. Policy*, 94:20-27. <https://doi.org/10.1016/j.marpol.2018.04.031>.

Kim, D.-H., C. Seung, and Y.-I. Seo. 2017. Multi-regional economic impacts of recreational fisheries: Analysis of Small Sea Ranch in Gyeong-Nam Province, Korea. *Mar. Policy*, 84:90-98. <https://doi.org/10.1016/j.marpol.2017.07.011>.

### Seafood Marketing and Trade Research

Béné, C., R. Arthur, H. Norbury, E. Allison, M. Beveridge, S. Bush, L. Campling, W. Leschen, D. Little, D. Squires, S. Thilsted, M. Troell, and M. Williams. 2016. Contribution of fisheries and aquaculture to food security and poverty reduction: Assessing the current evidence. *World Devel.*, 79:177-196. <https://doi.org/10.1016/j.worlddev.2015.11.007>.

Crona, B., X. Basurto, D. Squires, S. Gelcich, T. Daw, A. Khan, E. Havice, V. Chomo, M. Troell, E. Buchary, and E. Allison. 2016. Towards a typology of interactions between small-scale fisheries and global seafood trade. *Mar. Policy*, 65:1-10. <https://doi.org/10.1016/j.marpol.2015.11.016>.

### Sociocultural Fisheries Research

Froehlich, H., R. Gentry, M. Rust, D. Grimm, and B. Halpern. 2017. Public perceptions of aquaculture: Evaluating spatiotemporal patterns of sentiment around the world. *PLOS One*, 12(1):e0169281. <https://doi.org/10.1371/journal.pone.0169281>.

## Protected Resources Economics Research

Squires, D., V. Restrepo, S. Garcia, and P. Dutton. 2018. Fisheries bycatch reduction within the least-cost biodiversity mitigation hierarchy: Conservatory offsets with an application to sea turtles. *Mar. Policy*, 93:55-61. <https://doi.org/10.1016/j.marpol.2018.03.018>.

Lent, R., and D. Squires. 2017. Reducing marine mammal bycatch in global fisheries: An economics approach. *Deep Sea Res. (II Top. Stud. Oceanogr.)*, 140:268-277. <https://doi.org/10.1016/j.dsr2.2017.03.005>.

Cárdenas, S., and D. Lew. 2016. Factors influencing willingness to donate to marine endangered species recovery in the Galapagos National Park, Ecuador. *Front. Mar. Sci.*, 3:60. <https://doi.org/10.3389/fmars.2016.00060>.

Smith, M., F. Asche, L. Benneer, E. Havice, A. Read, and D. Squires. 2014. Will a catch share for whales improve social welfare? *Ecol. Appl.*, 24(1):15-23. <https://doi.org/10.1890/13-0085.1>.

Squires, D. 2014. Biodiversity conservation in Asia. *Asia Pac. Policy Stud.*, 1(1):144-159. <https://doi.org/10.1002/app5.13>.

## THEORETICAL

### Commercial Fisheries Economics Research

Kronbak, L., D. Squires, and N. Vestergaard. 2014. Recent developments in fisheries economics research. *Int. Rev. Environ. Resour. Econ.*, 7(1):67-108.

Squires, D., R. Clarke, and V. Chan. 2014. Subsidies, public goods, and external benefits in fisheries. *Mar. Policy*, 45:222-227. <https://doi.org/10.1016/j.marpol.2013.11.002>.

Woodward, R., and D. Tomberlin. 2014. Practical precautionary resource management using robust optimization. *Environ. Manage.*, 54(4):828-839. <https://doi.org/10.1007/s00267-014-0348-1>.

Ono, K., D. Holland, and R. Hilborn. 2013. How does species association affect mixed stock fisheries management? A comparative analysis of the effect of marine protected areas, discard bans, and individual fishing quotas. *Can. J. Fish. Aquat. Sci.*, 70(12):1792-1804. <https://doi.org/10.1139/cjfas-2013-0046>.

Squires, D., and N. Vestergaard. 2013. Technical change and the commons. *Rev. Econ. Statist.*, 95(5):1769-1787. [https://doi.org/10.1162/REST\\_a\\_00346](https://doi.org/10.1162/REST_a_00346).

Squires, D., and N. Vestergaard. 2013. Technical change in fisheries. *Mar. Policy*, 42:286-292. <https://doi.org/10.1016/j.marpol.2013.03.019>.

### Ecosystem-Based Management Research

Ryan, R., D. Holland, and G. Herrera. 2014. Ecosystem externalities in fisheries. *Mar. Resour. Econ.*, 29(1):39-53. <https://doi.org/10.1086/676288>.

### Sociocultural Fisheries Research

Jones, K., S. Alexander, N. Bennett, L. Bishop, A. Budden, M. Cox, M. Crosas, E. Game, J. Geary, C. Hahn, D. Hardy, J. Johnson, S. Karcher, M. LaFevor, N. Motzer, P. Pinto da Silva, J. Pittman, H. Randell, J. Silva, J. Smith, M. Smorul, C. Strasser, C. Strawhacker, A. Stuhl, N. Weber, and D. Winslow. 2018. Qualitative data sharing and re-use for socio-environmental systems research: A synthesis of opportunities, challenges, resources and approaches. National Socio-Environmental Synthesis Center. SESYNC White Paper, 34 p. <https://doi.org/10.13016/M2WH2DG59>.

### Protected Resources Economics Research

*Lew, D.* 2018. Discounting future payments in stated preference choice experiments. *Resource Energy Econ.*, 54:150-164. <https://doi.org/10.1016/j.reseneeco.2018.09.003>.

*Wallmo, K., K. Bisack, D. Lew, and D. Squires*, eds. 2016. Protected species economics: Concepts in research and management. Vol. 2, 133 p. *Frontiers in Marine Science*, Lausanne, Switzerland.



# Resources



An angler hook and line fishing during a family trip in Florida.  
Photo: NOAA Fisheries/Kristy Wallmo



## UNITED STATES

### Federal Agencies

- Office of Science and Technology, NOAA Fisheries | [www.fisheries.noaa.gov/about/office-science-and-technology](http://www.fisheries.noaa.gov/about/office-science-and-technology)
- Marine Recreational Information Program | [www.fisheries.noaa.gov/topic/recreational-fishing-data](http://www.fisheries.noaa.gov/topic/recreational-fishing-data)
- Office of Marine Conservation, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State | [www.state.gov/bureaus-offices/under-secretary-for-economic-growth-energy-and-the-environment/bureau-of-oceans-and-international-environmental-and-scientific-affairs/office-of-marine-conservation/](http://www.state.gov/bureaus-offices/under-secretary-for-economic-growth-energy-and-the-environment/bureau-of-oceans-and-international-environmental-and-scientific-affairs/office-of-marine-conservation/)

## NORTH PACIFIC

### Federal Agencies

- Alaska Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/alaska-fisheries-science-center](http://www.fisheries.noaa.gov/about/alaska-fisheries-science-center)
- Alaska Regional Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/alaska-regional-office](http://www.fisheries.noaa.gov/about/alaska-regional-office)
- Alaska Region, U.S. Fish and Wildlife Service | [www.fws.gov/alaska/](http://www.fws.gov/alaska/)
- District 17, U.S. Coast Guard | [www.pacificarea.uscg.mil/Our-Organization/District-17/](http://www.pacificarea.uscg.mil/Our-Organization/District-17/)

### State Agencies

- Alaska Department of Fish and Game | [www.adfg.state.ak.us](http://www.adfg.state.ak.us)

### Councils and Commissions

- North Pacific Fishery Management Council | [www.npfmc.org](http://www.npfmc.org)
- Pacific States Marine Fisheries Commission | [www.psmfc.org](http://www.psmfc.org)
- Fisheries Economics Data Program Pacific States Marine Fisheries Commission | [www.psmfc.org/efin](http://www.psmfc.org/efin)
- International Pacific Halibut Commission | [www.iphc.int](http://www.iphc.int)

## PACIFIC

### Federal Agencies

- Northwest Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/northwest-fisheries-science-center](http://www.fisheries.noaa.gov/about/northwest-fisheries-science-center)
- West Coast Regional Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/west-coast-regional-office](http://www.fisheries.noaa.gov/about/west-coast-regional-office)
- Southwest Fisheries Science Center | [www.fisheries.noaa.gov/about/southwest-fisheries-science-center](http://www.fisheries.noaa.gov/about/southwest-fisheries-science-center)
- Pacific Region, U.S. Fish and Wildlife Service | [www.fws.gov/pacific](http://www.fws.gov/pacific)
- California and Nevada, U.S. Fish and Wildlife Service | [www.fws.gov/cno](http://www.fws.gov/cno)
- District 13, U.S. Coast Guard | [www.pacificarea.uscg.mil/Our-Organization/District-13/](http://www.pacificarea.uscg.mil/Our-Organization/District-13/)

### State Agencies

- California Department of Fish and Game | [www.wildlife.ca.gov](http://www.wildlife.ca.gov)
- Oregon Department of Fish and Wildlife | [www.dfw.state.or.us](http://www.dfw.state.or.us)
- Washington Department of Fish and Wildlife | <http://wdfw.wa.gov/>

### Councils and Commissions

- Pacific Fishery Management Council | [www.pcouncil.org](http://www.pcouncil.org)
- Pacific States Marine Fisheries Commission | [www.psmfc.org](http://www.psmfc.org)
- Fisheries Economics Data Program - Pacific States Marine Fisheries Commission | [www.psmfc.org/efin](http://www.psmfc.org/efin)
- International Pacific Halibut Commission | [www.iphc.int](http://www.iphc.int)

## WESTERN PACIFIC

### Federal Agencies

- Pacific Islands Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/pacific-islands-fisheries-science-center](http://www.fisheries.noaa.gov/about/pacific-islands-fisheries-science-center)
- Pacific Islands Regional Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/pacific-islands-regional-office](http://www.fisheries.noaa.gov/about/pacific-islands-regional-office)
- Pacific Region, U.S. Fish and Wildlife Service | [www.fws.gov/pacific](http://www.fws.gov/pacific)
- District 14, U.S. Coast Guard | [www.pacificarea.uscg.mil/Our-Organization/District-14/](http://www.pacificarea.uscg.mil/Our-Organization/District-14/)

## State Agencies

- Hawai'i Department of Land and Natural Resources | [www.dlnr.hawaii.gov/](http://www.dlnr.hawaii.gov/)
- Guam Office of the Governor | <http://governor.guam.gov/>
- Division of Fish and Wildlife, Commonwealth of the Northern Mariana Islands | [http://www.dfw.gov.mp/Monument\\_Page.html](http://www.dfw.gov.mp/Monument_Page.html)

## Councils and Commissions

- Western Pacific Fishery Management Council | [www.wpcouncil.org](http://www.wpcouncil.org)

## NEW ENGLAND

### Federal Agencies

- Northeast Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/northeast-fisheries-science-center](http://www.fisheries.noaa.gov/about/northeast-fisheries-science-center)
- Greater Atlantic Regional Fisheries Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/greater-atlantic-regional-fisheries-office](http://www.fisheries.noaa.gov/about/greater-atlantic-regional-fisheries-office)
- Northeast Region, U.S. Fish and Wildlife Service | [www.fws.gov/northeast](http://www.fws.gov/northeast)
- District 1, U.S. Coast Guard | [www.atlanticarea.uscg.mil/Our-Organization/District-1/](http://www.atlanticarea.uscg.mil/Our-Organization/District-1/)

### State Agencies

- Maine Department of Marine Resources | [www.maine.gov/dmr/](http://www.maine.gov/dmr/)
- Rhode Island Department of Environmental Management | [www.dem.ri.gov](http://www.dem.ri.gov)
- Massachusetts Division of Marine Fisheries | [www.mass.gov/orgs/division-of-marine-fisheries](http://www.mass.gov/orgs/division-of-marine-fisheries)
- Connecticut Department of Environmental Protection | [www.ct.gov/deep/](http://www.ct.gov/deep/)
- New Hampshire Fish and Game Department | [www.wildlife.state.nh.us](http://www.wildlife.state.nh.us)

### Councils and Commissions

- New England Fishery Management Council | [www.nefmc.org](http://www.nefmc.org)
- Atlantic States Marine Fisheries Commission | [www.asmfc.org](http://www.asmfc.org)

## MID-ATLANTIC

### Federal Agencies

- Northeast Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/northeast-fisheries-science-center](http://www.fisheries.noaa.gov/about/northeast-fisheries-science-center)
- Greater Atlantic Regional Fisheries Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/greater-atlantic-regional-fisheries-office](http://www.fisheries.noaa.gov/about/greater-atlantic-regional-fisheries-office)
- Northeast Region, U.S. Fish and Wildlife Service | [www.fws.gov/northeast](http://www.fws.gov/northeast)
- District 5, U.S. Coast Guard | [www.atlanticarea.uscg.mil/Our-Organization/District-5/](http://www.atlanticarea.uscg.mil/Our-Organization/District-5/)

### State Agencies

- Delaware Division of Fish and Wildlife | <https://dnrec.alpha.delaware.gov/fish-wildlife/>
- Pennsylvania Fish and Boat Commission | [www.fishandboat.com/](http://www.fishandboat.com/)
- Fisheries and Boating Service, Maryland Department of Natural Resources | [www.dnr.state.md.us/fisheries](http://www.dnr.state.md.us/fisheries)
- New Jersey Division of Fish and Wildlife | [www.state.nj.us/dep/fgw](http://www.state.nj.us/dep/fgw)
- Marine Resources Councils and Boards Bureau of Marine Resources, New York Department of Environmental Conservation | [www.dec.ny.gov/about/568.html](http://www.dec.ny.gov/about/568.html)
- Virginia Marine Resources Commission | [www.dnr.maryland.gov/fisheries](http://www.dnr.maryland.gov/fisheries)

### Councils and Commissions

- Mid-Atlantic Fishery Management Council | [www.mafmc.org](http://www.mafmc.org)
- Atlantic States Marine Fisheries Commission | [www.asmfc.org](http://www.asmfc.org)

### SOUTH ATLANTIC

#### Federal Agencies

- Southeast Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/southeast-fisheries-science-center](http://www.fisheries.noaa.gov/about/southeast-fisheries-science-center)
- Southeast Regional Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/southeast-regional-office](http://www.fisheries.noaa.gov/about/southeast-regional-office)
- Southeast Region, U.S. Fish and Wildlife Service | [www.fws.gov/southeast](http://www.fws.gov/southeast)
- Southwest Region, U.S. Fish and Wildlife Service | [www.fws.gov/southwest](http://www.fws.gov/southwest)
- District 7, U.S. Coast Guard | [www.atlanticarea.uscg.mil/Our-Organization/District-7/](http://www.atlanticarea.uscg.mil/Our-Organization/District-7/)

#### State Agencies

- Florida Fish and Wildlife Conservation Commission | [www.myfwc.com/](http://www.myfwc.com/)
- Coastal Resources Division, Georgia Department of Natural Resources | [www.coastalgadnr.org/](http://www.coastalgadnr.org/)
- Division of Marine Fisheries, North Carolina Department of Environment and Natural Resources | <http://portal.ncdenr.org/web/mf/>
- Marine Resources Division, South Carolina Department of Natural Resources | [www.dnr.sc.gov](http://www.dnr.sc.gov)

#### Councils and Commissions

- South Atlantic Fishery Management Council | [www.safmc.net](http://www.safmc.net)
- Atlantic States Marine Fisheries Commission | [www.asmfc.org](http://www.asmfc.org)

### GULF OF MEXICO

#### Federal Agencies

- Southeast Fisheries Science Center, NOAA Fisheries | [www.fisheries.noaa.gov/about/southeast-fisheries-science-center](http://www.fisheries.noaa.gov/about/southeast-fisheries-science-center)
- Southeast Regional Office, NOAA Fisheries | [www.fisheries.noaa.gov/about/southeast-regional-office](http://www.fisheries.noaa.gov/about/southeast-regional-office)
- Southeast Region, U.S. Fish and Wildlife Service | [www.fws.gov/southeast](http://www.fws.gov/southeast)
- Southwest Region, U.S. Fish and Wildlife Service | [www.fws.gov/southwest](http://www.fws.gov/southwest)
- District 8, U.S. Coast Guard | [www.atlanticarea.uscg.mil/Our-Organization/District-8/](http://www.atlanticarea.uscg.mil/Our-Organization/District-8/)

#### State Agencies

- Florida Fish and Wildlife Conservation Commission | [www.myfwc.com/](http://www.myfwc.com/)
- Marine Resources Division, Alabama Department of Conservation and Natural Resources | [www.outdooralabama.com](http://www.outdooralabama.com)
- Mississippi Department of Marine Resources | [www.dmr.ms.gov/](http://www.dmr.ms.gov/)
- Louisiana Department of Wildlife and Fisheries | [www.wlf.louisiana.gov/](http://www.wlf.louisiana.gov/)
- Texas Parks and Wildlife Department | [www.tpwd.texas.gov/](http://www.tpwd.texas.gov/)

#### Councils and Commissions

- Gulf of Mexico Fishery Management Council | [www.gulfcouncil.org](http://www.gulfcouncil.org)
- Gulf States Marine Fisheries Commission | [www.gsmfc.org](http://www.gsmfc.org)

### PROFESSIONAL ORGANIZATIONS

- North American Association of Fisheries Economists | <https://naafe.oregonstate.edu/>
- International Institute of Fisheries Economics and Trade | <https://iifet.oregonstate.edu/>

### OTHER ORGANIZATIONS AND INFORMATION

- Organisation for Economic Co-operation and Development | [www.oecd.org/](http://www.oecd.org/)
- Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations | [www.fao.org/fishery/capture/en](http://www.fao.org/fishery/capture/en)
- Marine Stewardship Council | [www.msc.org](http://www.msc.org)

# Glossary



A woman hook and line fishing.  
Photo: NOAA Fisheries

**Angler<sup>1</sup>** — A person catching fish with no intent to sell, including people releasing the catch. Also known as a recreational fisherman.

**Annual Payroll<sup>2</sup>** — Includes all forms of compensation such as salaries, wages, reported tips, commissions, bonuses, vacation allowances, sick-leave pay, employee contributions to qualified pension plans, and the value of taxable fringe benefits. For corporations, it includes amounts paid to officers and executives; for unincorporated businesses, it does not include profit or other compensation of proprietors or partners. Payroll is reported before deductions for Social Security, income tax, insurance, union dues, etc.

**Annual Receipts<sup>3</sup>** — Includes gross receipts, sales, commissions, and income from trades and businesses, as reported on annual business income tax returns. Business income consists of all payments received for services rendered by non-employer businesses, such as payments received as independent agents and contractors. The composition of non-employer receipts may differ from receipts data published for employer establishments. For example, for wholesale agents and brokers without payroll (non-employers), the receipts item contains commissions or earnings. In contrast, for wholesale agents and brokers with payroll (employers), the sales and receipts item published in the Economic Census represents the value of the goods involved in the transactions.

**Buyback Program** — A management tool available to fishery managers intended to ease fishing-related pressure on marine resources. Fishing vessels are purchased by the government or by the fishing industry itself. Then they are removed from a specific fishery where fish stocks or stock complexes are considered overfished or subject to overfishing.

**Bycatch<sup>1</sup>** — Species other than the primary target species that are caught incidental to the harvest of the primary species. Bycatch may be retained or discarded; discards may occur for regulatory or economic reasons.

**Catch<sup>1</sup>** — 1. To undertake any activity that results in taking fish out of its environment dead or alive, or to bring fish on board a vessel dead or alive; 2. The total number (or weight) of fish caught by fishing operations. Catch should include all fish killed by the act of fishing, not just those landed; For this report, recreational catch refers to the total number of individual fish released (thrown back into the sea) and harvested (not thrown back into the sea) by recreational fishermen (anglers).

**Catch Share Program<sup>4</sup>** — This is a generic term used to describe a fishery management program that allocates a specific portion of the total fishery catch to individuals, cooperatives, communities, or other entities, including sectors. The term encompasses more specific programs defined in legislation such as Limited Access Privilege Programs (LAPPs) and Individual Fishing Quotas (IFQs). Note that a catch share allocated to a sector is different from a general sectoral allocation or distribution to an entire segment of a fishery (such as a recreational sector allocation or a longline gear sector allocation). The two differ because the recipient of the catch share is responsible for terminating fishing activity when their specific share is reached.

**Coastal County<sup>5</sup>** — Counties with borders that are within 25 miles of the coast are considered coastal. All counties in Rhode Island, Connecticut, Delaware, and Florida are considered coastal.

**Coastal County Angler** — For this report, a coastal county angler refers to a recreational fisherman who lives within a given state and within a coastal county of that state.

**Commercial Fisheries** — In this report, commercial fisheries refer to fishing operations that sell their catch for profit. The term does not include subsistence fishermen or saltwater anglers who fish for sport. It also excludes the for-hire sector, which earns its revenue from selling recreational fishing trips to saltwater anglers. The commercial fisheries section reports on economic impacts, landings revenue, landings, and ex-vessel prices of key species/species groups.



**Commercial Fishing Location Quotient (CFLQ)<sup>6</sup>** — For this report, the CFLQ is calculated as the ratio of a state's distribution of employment in commercial fishing industries compared with the distribution of commercial fishing industries in the U.S. The CFLQ is calculated using the "Location Quotient Calculator" provided by the Bureau of Labor Statistics, U.S. Department of Labor.

**Community Development Quota Program (CDQ)<sup>1</sup>** — A program in western Alaska under which a percentage of the total allowable catch (TAC) of Bering Sea commercial fisheries is allocated to specific communities. Communities eligible for this program must be located within 50 miles of the Bering Sea coast or on an island within the Bering Sea; meet criteria established by the State of Alaska; be a village certified by the Secretary of the Interior pursuant to the Alaska Native Claims Settlement Act; and consist of residents who conduct more than half of their current commercial or subsistence fishing in the Bering Sea or waters surrounding the Aleutian Islands. Currently 7.5 percent of the TAC in the pollock, halibut, sablefish, crab and groundfish fisheries is allocated to the CDQ Program.

**Dedicated Access Privileges (DAPs)<sup>7</sup>** — As defined by the U.S. Commission on Ocean Policy, a DAP program assigns an individual or other entity access to a predetermined portion of the annual catch in a particular fishery. In some cases, the privilege is transferable and may be bought and sold, creating a market. The term encompasses a range of tools, including access privileges assigned to individuals (that is, individual transferable quotas), and to groups or communities (for example, community development quotas, cooperatives, and area-based quotas). DAP is often synonymous with Limited Access Privilege Programs (see "Limited Access Privilege Program") and are sometimes referred to as rights-based management. However, "rights-based management" implies granting an individual the "right" to fish. Apart from certain tribes, U.S. fishermen do not have inalienable rights to fish because the fishery resources of the U.S. belong to all people of the U.S. Under current law, fishermen are granted a "privilege" to fish, subject to certain conditions.

**Discards<sup>1</sup>** — To release or return a fish or other species to the sea, dead or alive, whether or not such fish or other species are brought fully on board a fishing vessel. Estimates of discards can be made in a variety of ways, including samples from observers and logbook records. Fish (or parts of fish) can be discarded for a variety of reasons such as having physical damage, being a non-target species for the trip, and compliance with management regulations like minimum size limits or quotas.

**Durable Equipment Expenditures or Durable Goods Expenditures<sup>8</sup>** — For this report, this term refers to expenses related to equipment used for recreational fishing activities. These expenses include the purchase of semi-durable goods (e.g., tackle, rods, reels, line); durable goods (e.g., motor boats and accessories, non-motorized boats, boating electronics, mooring, boat storage, boat insurance, vehicles, second homes); and angling accessories and multi-purpose items (e.g., magazines, club dues, saltwater angling-specific clothing, camping gear).

**Ecolabel<sup>9</sup>** — In fisheries, ecolabelling schemes entitle a fishery product to bear a distinctive logo or statement that certifies that the fish has been harvested in compliance with specified conservation and sustainability standards. The logo or statement is intended to facilitate informed decisions by purchasers whose choices may promote and stimulate the sustainable use of fishery resources.

**Economic Impact Model<sup>8,10,11</sup>** — Economic impact models capture how sales in a sector generate economic impacts directly in the sector in which the sale was made. The sales then ripple throughout the state and national economies as each dollar spent generates additional sales by other firms and consumers. The NOAA Fisheries Commercial Fishing & Seafood Industry Input/Output Model uses an IMPLAN platform to estimate the economic impacts associated with the harvesting of fish by U.S. commercial fishermen and other major components of the U.S. seafood industry. As used here, the term fish refers to the entire range of finfish, shellfish, and other life (that is, sea urchins, seaweed, kelp and worms) from marine and freshwaters that are included in the landings data maintained by the National Marine Fisheries Service. The NOAA Fisheries Recreational Economic Impact Model, which also uses an IMPLAN platform, estimates the economic impacts generated by expenditures made by marine (saltwater) anglers.



**Economic Impacts<sup>8,10,11</sup>** — For this report, the economic impacts of the commercial fishing sector and seafood industry refer to the employment (full-time and part-time jobs), personal income, and output (sales by U.S. businesses) generated by the commercial harvest sector and other major components of the U.S. seafood industry. These components include processors and dealers, wholesalers and distributors, grocers, and restaurants. Economic impacts of recreational fishing activities refer to the amount of sales generated, the number of jobs supported, labor income, and the contribution to gross domestic product (GDP) by state (also known as value-added impacts) from expenditures related to recreational fishing.

**Effort** — For this report, effort refers to the number of angler trips taken by recreational fishermen (anglers). An angler trip is defined as any part of a single day (24 hours) of marine recreational fishing.

**Employee Compensation<sup>12</sup>** — This is related to gross domestic product (GDP) by state and is an estimate of the sum of employee wages and salaries and supplements to wages and salaries. Wages and salaries are measured on an accrual, or “when earned” basis, which may be different from the measure of wages and salaries measured on a disbursement, or “when paid” basis. Wages and salaries and supplements of federal military and civilian government employees stationed abroad are excluded from the measure of GDP by state.

**Employer Establishments<sup>13</sup>** — Businesses with payroll and paid employees with a single physical location at which business is conducted or services or industrial operations are performed. An employee establishment is not necessarily identical to a company or enterprise, which may consist of one or more establishments. When two or more activities are carried on at a single location under a single ownership, all activities generally are grouped together as a single establishment. The entire establishment is classified on the basis of its major activity, and all data are included in that classification.

**Employment Impacts** — Employment is specified on the basis of full-time and part-time jobs supported directly or indirectly by the purchases made by anglers or by the commercial harvest and seafood sector economic activity. This impact is measured in the number of full and part-time jobs.

**Endangered Species<sup>14</sup>** — As defined by the Endangered Species Act (ESA), an endangered species is any species which is in danger of extinction throughout all or a significant portion of its range. See also “Threatened Species.”

**Endangered Species Act (ESA)<sup>14</sup>** — The ESA was signed on December 28, 1973 and provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. The ESA replaced the Endangered Species Conservation Act of 1969. Congress has amended the ESA several times.

**Exclusive Economic Zone (EEZ)<sup>1</sup>** — The EEZ is the area that extends 200 nautical miles from the seaward boundary of the coastal states. The seaward boundary for most states is 3 nautical miles with the exceptions of Texas, Puerto Rico, and the Gulf Coast of Florida, which is 9 nautical miles. The U.S. claims and exercises sovereign rights and exclusive fishery management authority over all fish and continental shelf resources through this 200-nautical-mile boundary.

**Expenditures<sup>8,11</sup>** — For this report, expenditures are related to recreational fishing activities and described as being one of two types: 1) expenditures related to a specific fishing trip; or 2) durable equipment expenditures.

**Fish Stock<sup>1</sup>** — A fish stock refers to the living resources in the community or population from which catches are taken in a fishery. The term “fish stock” usually implies that the particular population is more or less isolated from other stocks of the same species and hence self-sustaining. In a particular fishery, the fish stock may be one or several species of fish. Here, it also includes commercial invertebrates and plants.

**Fishery Management Council (FMC) or Regional Fishery Management Council<sup>15</sup>** — A regional fisheries management body established by the Magnuson-Stevens Act to manage fishery resources in eight designated regions of the United States.

**Fishery Management Plan (FMP)<sup>15</sup>** — 1. A document prepared under supervision of the appropriate fishery management council (FMC) for the management of stocks of fish judged to require management. The plan generally must be formally approved. An FMP includes data, analyses, and management measures; 2. A plan containing conservation and management measures for fishery resources, and other provisions required by the Magnuson-Stevens Act, developed by fishery management councils or the Secretary of Commerce.

**Fishing Cooperatives<sup>15</sup>** — A market-based fisheries management tool where access to fisheries resources is limited to a specific group of fishermen. See also “Catch Share Program.”

**Fishing Day** — For this report, a fishing day refers to a partial or full day spent in recreational fishing. This term is used in the Alaska recreational fishing tables.

**Fishing Effort<sup>1</sup>** — The amount of fishing gear of a specific type used on the fishing grounds over a given unit of time. For example, hours trawled per day, number of hooks set per day, or number of hauls of a beach seine per day. When two or more kinds of gear are used, the respective efforts must be adjusted to some standard type before being added. For recreational fishing activities, fishing effort refers to the number of fishing trips made by recreational anglers.

**Fishing Mode** — For this report, fishing mode refers to the type of recreational fishing a recreational fisherman (angler) engages in, such as fishing from shore, a private or rental boat, or a for-hire boat.

**Fishing Trip** — For this report, a fishing trip is defined as an angler trip. An angler trip is defined as any part of a single day (24 hours) of marine recreational fishing. Fishing trips are classified as occurring in one of three fishing modes: 1) a shore-based fishing trip; 2) by a private or rental boat; or 3) on a for-hire fishing boat.

**For-Hire Mode** — For this report, this fishing mode refers to trips taken by recreational fishermen (anglers) on a party (also referred to as a head boat) or charter boat. In the Gulf and South Atlantic, for-hire mode does not include head boats.

**Gross Domestic Product (GDP) by State or Gross State Product (GSP)<sup>12</sup>** — Previously known as the Gross State Product, the GDP by state is the value added in production by the labor and capital located in a state. GDP for a state is derived as the sum of the GDP originating in all industries in the state.

**Harvest<sup>1</sup>** — The total number or weight of fish caught and kept from an area over a period of time. Note that landings, catch, and harvest are different. However, in Hawai`i and the Gulf states, recreational harvest includes fish thrown back dead. See also “Catch” and “Release.”

**Income Impacts<sup>8,10,11</sup>** — Income impacts include personal income (wages and salaries) and proprietors’ income (income from self-employment).

**Individual Fishing Quota (IFQ)<sup>1</sup>** — A type of limited entry; an allocation to an individual (a person or a legal entity, for example, a vessel owner or company) of a right (privilege) to harvest a certain amount of fish in a certain period of time. It is also often expressed as an individual share of an aggregate quota, or total allowable catch (TAC). See also “Individual Transferable Quota” and “Catch Share Program.”

**Individual Transferable Quota (ITQ)<sup>1</sup>** — A type of individual fishing quota (IFQ) allocated to individual fishermen or vessel owners that can be transferred (sold or leased) to others. See also “Individual Fishing Quota.”

**Industry Sector** — For this report, fishing- and marine-related industries were combined into industry sectors. Two industry sectors were included in this report: 1) seafood sales and processing; and 2) transport, support, and marine operations. Fishing and marine-related industries were chosen from the County Business Patterns Data Series based on data availability and perceived relevance to fishing or marine activities. These industries were then combined into one of these two industry sectors.

**Key Species or Species Groups** — For this report, up to 10 species or species groups were chosen as “key” species or species groups due to their regional importance to commercial and recreational fisheries. The regional importance of these key species or species groups was chosen based on their economic and/or historical or cultural significance to a state or region.

**Landing Revenues** — The dollar value of commercial fisheries landings.

**Landings<sup>1</sup>** — 1. The number or poundage of fish unloaded by commercial fishermen or brought to shore by recreational fishermen for personal use. Landings are reported at the locations at which fish are brought to shore; 2. The part of the catch that is selected and kept during the sorting procedures on board vessels and successively discharged at dockside.

**License Limitation Program or Limited Entry Program<sup>1</sup>** — A management tool available to fishery managers where the number of commercial fishermen or vessels licensed to participate in a fishery is legally restricted. A management agency often uses this management tool to limit entry into a fishery.

**Limited Access Privilege Program (LAPP) or Limited Access Privilege System<sup>15</sup>** — As defined in the Magnuson-Stevens Act, LAPPs limit participation in a fishery to those satisfying certain eligibility criteria or requirements contained in a fishery management plan (FMP) or associated regulation. A limited access privilege is a federal permit, issued as part of a limited access system, to harvest a quantity of fish expressed by a unit or units representing a portion of the total allowable catch (TAC) of the fishery that may be received or held for exclusive use by a person. A LAPP includes an individual fishing quota (IFQ) or individual tradable quota (ITQ) but does not include community development quotas (CDQs). LAPPs are sometimes known as Dedicated Access Privileges (DAPs). However, unlike LAPPs, DAPs generally encompass CDQs as well as IFQs (see “Dedicated Access Privileges”). LAPPs are a type of catch share program. See also “Catch Share Program.”

**Limited Entry Program** — Also known as a license limitation program; see “License Limitation Program.”

**Location Quotient<sup>6</sup>** — Location Quotients (LQs) are ratios that allow an area’s distribution of employment by industry to be compared to a reference or base area’s distribution. The reference area is usually the U.S., but it can also be a state or metropolitan area. The reference or base industry is usually the all-industry total. LQs also allow areas to be easily compared with each other. If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the reference area. An LQ greater than 1 indicates an industry with a greater share of the local area employment than in the reference area.

For example (assuming the U.S. as the reference area), Las Vegas will have an LQ greater than 1 in the Leisure and Hospitality industry, because this industry makes up a larger share of the Las Vegas employment total than it does for the country as a whole. LQs are calculated by first dividing local industry employment by the all-industry total of local employment. Next, reference area industry employment is divided by the all-industry total for the reference area. Finally, the local ratio is divided by the reference area ratio.

**Magnuson-Stevens Fishery Conservation and Management Act or Magnuson-Stevens Act (MSA)<sup>1</sup>** — Federal legislation responsible for establishing the Regional Fishery Management Councils (FMCs) and the mandatory and discretionary guidelines for federal fishery management plans (FMPs). This legislation was originally enacted in 1976 as the Fishery Management and Conservation Act. Its name was changed to the Magnuson Fishery Conservation and Management Act in 1980, and in 1996 it was renamed the Magnuson-Stevens Fishery Conservation and Management Act.

**Market-based Management<sup>15</sup>** — Market-based management is an umbrella term that encompasses approaches that provide economic incentives to protect fisheries from overharvest. These approaches contrast with conventional fisheries management approaches, such as buyback programs and license limitation programs (see “Buyback Program” and “License Limitation Program”). One example of a market-based management approach for fisheries is a limited access privilege program (LAPP; see “Limited Access Privilege Program”) that includes an individual fishing quota. A LAPP provides individual fishermen an exclusive, market-based share of a harvest quota or total allowable catch (TAC) of a fishery.

**Marine Coastal County** — For this report, a marine coastal county is a coastal county that is adjacent to an ocean coastline. See also “Coastal County.”

**Marine Economy** — For this report, the marine economy refers to the economic activity generated by fishing- and marine-related industries located in a coastal state. Fishing- and marine-related industries were chosen from industries defined in the County Business Patterns Data Series provided by the U.S. Census Bureau. Industries listed in this report were chosen based on that industry’s direct contribution to fishing and marine activities, and whether data were available for that industry. Information such as the number of establishments, number of employees, and annual payroll for these fishing and marine-related industries was used to determine their relative levels of economic activity in a state. These industries were categorized into one of two industry sectors: 1) seafood sales and processing; and 2) transport, support, and marine operations. See also “Industry Sector.”

**Non-Coastal County Angler** — For this report, a non-coastal county angler refers to a recreational fisherman who lives within a given state but not in a coastal county of that state.

**Non-Employer Firms<sup>3</sup>** — A non-employer business is one that has no paid employees, has annual business receipts of \$1,000 or more (\$1 or more in the construction industries), and is subject to federal income taxes. Most non-employers are self-employed individuals operating very small unincorporated businesses that may or may not be the owner’s principal source of income.

**Non-Resident Angler** — For this report, a non-resident in the U.S. table refers to a recreational fisherman (angler) who resides outside the U.S.; a non-resident in the regional and state tables refers to an angler who did not reside in the state where they fished.

**Out-of-State Angler** — For this report, an out-of-state angler is a recreational fisherman (angler) who does not reside within a given coastal state.

**Overcapacity<sup>16</sup>** — When the harvesting capability within a given fishery exceeds the level of harvest allowed for that fishery.

**Overcapitalization<sup>9</sup>** — When the amount of harvesting capacity in a fishery exceeds the amount needed to harvest the desired amount of fish at least cost.

**Overfished<sup>1</sup>** — 1. An overfished stock or stock complex “whose size is sufficiently small that a change in management practices is required to achieve an appropriate level and rate of rebuilding.” A stock or stock complex is considered overfished when its population size falls below the minimum stock size threshold (MSST). A rebuilding plan is required for stocks that are deemed overfished; 2. A stock is considered overfished when exploited beyond an explicit limit past which its abundance is considered “too low” to ensure safe reproduction. In many fisheries, the term is used when biomass has been estimated to be below a biological reference point that is used as the signpost defining an “overfished condition.”

**Overfishing<sup>1</sup>** — 1. According to the National Standard Guidelines, “overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce maximum sustainable yield (MSY) on a continuing basis.” Overfishing is occurring if the maximum fishing mortality threshold (MFMT) is exceeded for 1 year or more; 2. In general, the action of exerting fishing pressure (fishing intensity) beyond the agreed optimum level. A reduction of fishing pressure would, in the medium term, lead to an increase in the total catch.

**Protected Species<sup>17</sup>** — Refers to any species that is protected by either the Endangered Species Act (ESA) or the Marine Mammal Protection Act (MMPA), and that is under the jurisdiction of NOAA Fisheries. This total includes all threatened, endangered, and candidate species, as well as all cetaceans and pinnipeds, excluding walruses.

**Recreational Fisheries** — Recreational fishing refers to fishing for leisure rather than to sell fish (commercial fishing) or for subsistence. The economic contributions or impacts of recreational fishing activities in the United States is based on spending by recreational anglers.

**Regional Fishery Management Council or Fishery Management Council (FMC)<sup>15</sup>** — The Magnuson-Stevens Act established eight Regional FMCs around the United States. Each council consists of voting and non-voting members who represent various federal, state, and tribal governments; fishing industry groups (commercial and/or recreational); and non-fishing groups (such as environmental organizations and academic institutions). Each council is tasked with creating fishery management plans for important fisheries within their regions.

**Release** — For this report, release refers to the number of individual fish caught by a recreational fisherman (angler) that are then returned to the sea (dead or alive). In Hawai`i and the Atlantic and Gulf states, release does not include fish returned to the sea that are dead. See also “Catch” and “Harvest.”

**Resident** — For this report, a resident in the U.S. table refers to a recreational fisherman (angler) who resides inside the U.S.; a resident in the regional and state tables refers to an angler who resides in the state where they fished.

**Sales Impacts<sup>8,10,11</sup>** — Sales impacts refer to the gross value of all sales by regional businesses affected by an activity, such as recreational or commercial fishing. For example, it includes both the direct sales made by the angler (commercial fisherman) and sales made between businesses and households resulting from that original sale by the angler (commercial fisherman).

**Sector Allocation Program<sup>17</sup>** — A fisheries management tool where a group of fishermen are allocated a quota or share of a total allowable catch (TAC), in accordance with an approved plan. This program is considered a type of catch share program. See also “Catch Share Program.”

**Species<sup>1</sup>** — A group of animals or plants having common characteristics that are able to breed together to produce fertile (capable of reproducing) offspring and maintain their “separateness” from other groups.

**Species Group<sup>1</sup>** — Group of species considered together because they are difficult to differentiate without detailed examination (very similar species), or because data for the separate species are not available (for example, in fishery statistics or commercial categories).

**Threatened Species<sup>14</sup>** — As defined by the Endangered Species Act (ESA), a threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. See also “Endangered Species.”

**Total Annual Durable Expenditures** — Total annual durable expenditures were estimated by multiplying mean durable expenditures by the estimated annual number of adult participants at the state level or the national level and adjusted by the Consumer Price Index to the current year.

**Total Annual Trip Expenditures** — Total annual trip expenditures are estimated at the state level by multiplying mean trip expenditures by the estimated number of adult trips in each trip mode (for-hire, private boat, and shore) and adjusted by the Consumer Price Index to the current year. The trip expenditures at the national level is the sum of state trip expenditures in each mode.

**Trip Expenditures** — For this report, trip expenditures refer to expenses incurred by recreational fishermen (anglers) on a fishing trip. Trip expenditures include expenditures made by residents (individuals who reside in a coastal or non-coastal county within a given state; a U.S. resident) and non-residents (individuals who do not reside within the United States).

**Value-Added Impacts<sup>8,10,11</sup>** — Value-Added impacts refer to the contribution made to the gross domestic product in a region from commercial fishing landings and recreational fishing expenditures.

## GLOSSARY NOTES

<sup>1</sup> Blackhart, K., D. G. Stanton, and M. Shimada (eds.). 2005. NOAA Fisheries Glossary, Revised edition, June 2006. NOAA Tech. Memo. NMFS-F/SPO-69, 61 p. Available at: <https://spo.nmfs.noaa.gov/content/tech-memo/noaa-fisheries-glossary> [accessed March 26, 2020].

<sup>2</sup> U.S. Census Bureau. County Business Patterns (CBP). Available at: <https://www.census.gov/programs-surveys/cbp.html> [accessed April 1, 2020].

<sup>3</sup> U.S. Census Bureau. Nonemployer Statistics. Available at: <https://www.census.gov/programs-surveys/nonemployer-statistics.html> [accessed April 1, 2020].

<sup>4</sup> NOAA Fisheries Policy Office. NOAA Catch Share Policy. Available at: <https://www.fisheries.noaa.gov/national/laws-and-policies/catch-shares> [accessed March 31, 2020].

<sup>5</sup> NOAA Fisheries. Recreational Fishing Data Glossary. Available at: <https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-glossary> [accessed March 31, 2020].

<sup>6</sup> Bureau of Labor Statistics. QCEW Location Quotient Details. Available at: <https://www.bls.gov/cew/about-data/location-quotients-explained.htm> [accessed April 1, 2020].

<sup>7</sup> U.S. Commission on Ocean Policy. An Ocean Blueprint for the 21st Century, Final Report. 2004. Available at: [https://govinfo.library.unt.edu/ocean-commission/documents/full\\_color\\_rpt/000\\_ocean\\_full\\_report.pdf](https://govinfo.library.unt.edu/ocean-commission/documents/full_color_rpt/000_ocean_full_report.pdf) [accessed April 1, 2020].

<sup>8</sup> Lovell, S. J., J. Hilger, S. Steinback, and C. Hutt. 2016. The Economic Contribution of Marine Angler Expenditures on Durable Goods in the United States, 2014. NOAA Tech. Memo. NMFS-F/SPO-165, 72 p. Available at: <https://spo.nmfs.noaa.gov/content/tech-memo/economic-contribution-marine-angler-expenditures-durable-goods-united-states-2014> [accessed March 12, 2020].

<sup>9</sup> FAO Fisheries Department. Fisheries Term Portal. Available at: <http://www.fao.org/faoterm/collection/fisheries/en/> [accessed April 1, 2020].

<sup>10</sup> Kirkley, J. The NMFS Commercial Fishing & Seafood Industry Input/Output Model (CFSI I/O Model). Available at: [https://pdfs.semanticscholar.org/8600/3a0004135375f1f13a888aca5e2eaf4fffd8.pdf?\\_ga=2.158730802.982576641.1585688544-2034208116.1585688544](https://pdfs.semanticscholar.org/8600/3a0004135375f1f13a888aca5e2eaf4fffd8.pdf?_ga=2.158730802.982576641.1585688544-2034208116.1585688544) [accessed April 6, 2020].

<sup>11</sup> Lovell, S. J., J. Hilger, N. A. Olsen, and S. Steinback. 2020. The Economic Contribution of Marine Angler Expenditures on Fishing Trips in the United States, 2017. NOAA Tech. Memo. NMFS-F/SPO-201, 80p. Available at: <https://spo.nmfs.noaa.gov/content/tech-memo/economic-contribution-marine-angler-expenditures-fishing-trips-united-states-2017> [accessed March 27, 2020].

<sup>12</sup> Bureau of Economic Analysis. Regional Economic Accounts: About Regional. Available at: <https://www.bea.gov/resources/learning-center/about-regional> [accessed April 1, 2020].

<sup>13</sup> U.S. Census Bureau. About the Economic Census. Available at: <https://www.census.gov/programs-surveys/economic-census/about.html> [accessed April 1, 2020].

<sup>14</sup> NOAA Fisheries. Endangered Species Act. Available at: <https://www.fisheries.noaa.gov/national/endangered-species-conservation/endangered-species-act> [accessed March 31, 2020].

<sup>15</sup> NOAA Fisheries. Magnuson-Stevens Fishery Conservation and Management Act. Available at: <https://www.fisheries.noaa.gov/resource/document/magnuson-stevens-fishery-conservation-and-management-act> [accessed April 1, 2020].



<sup>16</sup> NOAA Fisheries. Status of U.S. Fisheries. Available at: <https://www.fisheries.noaa.gov/national/population-assessments/status-us-fisheries> [accessed March 31, 2020.]

<sup>17</sup> Terry, J., J. Walden, and J. Kirkley. 2008. National Assessment of Excess Harvesting Capacity in Federally Managed Commercial Fisheries NOAA Tech. Memo. NMFS-F/SPO-93, 366 p. Available at: <https://spo.nmfs.noaa.gov/content/tech-memo/national-assessment-excess-harvesting-capacity-federally-managed-commercial> [accessed March 31, 2020].



Shrimp trawlers in Bayou La Batre, Alabama.  
Photo: NOAA Fisheries/Noelle Olsen

