



FISH AND WILDLIFE ECONOMICS AND STATISTICS

BETTER INFORMATION. BETTER DECISIONS.

Comparing NOAA's Recreational and Commercial Fishing Economic Data

**Produced for the
American Sportfishing Association**

May 2013

Executive Summary

In 2011 anglers landed 204.9 million pounds of saltwater fish.^{1,2} In pursuit of these fish, saltwater anglers spent \$26.8 billion on fishing tackle and equipment and trip-related goods and services. Including multiplier effects, their spending generated \$70.3 billion in economic output (sales), created \$32.5 billion in value-added growth and supported 454,542 jobs with \$20.5 billion in income.

Commercial fishermen in the U.S. landed 9.9 billion pounds of fin- and shellfish in 2011 valued at \$5.3 billion. Finfish represented 86 percent of the total commercial landings by weight and 49 percent of the total value, at 8.5 billion pounds and \$2.6 billion respectively.

Of the commercial sector's landings, 4.9 billion finfish pounds were the same species frequently targeted by anglers, with a landed value of \$2.1 billion. Including multiplier effects along the entire value chain from harvesters to processors to final consumers, commercial finfish harvest of species also sought by anglers generated \$20.5 billion of economic output. This is the "sales impact," which is not to be confused with expenditures or retail sales which created \$10.6 billion in value-added impacts and generated 304,611 jobs with \$7.5 billion of income.³

Table 1. Economic Impacts of Recreational and Commercial Fishing in the United States, 2011.

U.S.			
Impacts	All Recreational Species ⁴	All Commercial Finfish Species	Commercial Landings of Finfish Species Also Sought by Anglers
Landings	204,947,000	8,480,921,000	4,854,877,000
Value of Landings (Commercial)		\$2,582,567,000	\$2,067,411,000
Expenditures (Recreational)	\$26,783,311,000		
Economic Impacts:			
Sales (total multiplier effect)	\$70,315,216,000	\$25,578,722,000	\$20,476,418,000
Jobs	454,542	380,513	304,611
Income	\$20,518,517,000	\$9,359,032,000	\$7,492,143,000
Value Added	\$32,471,761,000	\$13,299,298,000	\$10,646,426,000

Commercial estimates include only finfish and excludes imports.

Table 2. Economic Impacts of Recreational and Commercial Fishing in the United States per Pound of Fish Harvested, 2011⁵.

Impacts	All Recreational Species	All Commercial Finfish Species	Commercial Landings of Species Also Sought by Anglers
Sales (total multiplier effect)	\$331.32	\$3.02	\$4.22
Jobs per 1,000 lbs	2.1	0.045	0.063
Income	\$96.32	\$1.10	\$1.54
Value Added	\$152.24	\$1.57	\$2.20

¹ Includes all harvested fish including NOAA Fisheries catch type categories A+B1

² Does not include fish caught in Alaska or Texas as estimates of recreational landings here were not available from NOAA.

³ A preliminary examination found that approximately 0.4 percent of fish harvested by anglers were species not targeted by the commercial sector. A more careful assessment of commercial species suggests the percentage of recreational-only species is less than that. Due to the small percentage of recreational fishing in this category, no adjustments were made to the published estimates of economic impacts from recreational fishing.

⁴ Does not include pounds landed in Alaska or Texas.

⁵ Recreational impacts do not include Texas or Alaska as estimates of pounds landed were not available from NOAA.

Introduction

The NOAA National Marine Fisheries Service (NOAA Fisheries) provides extensive and detailed data concerning both recreational and commercial fishing. These details include the number, weight and species harvested through both types of fishing. Although the specific economic activities associated with each type of fishing vary considerably, the estimation of economic impacts provides a common metric for comparison. However, there are important differences in the species harvested by recreational and commercial anglers. In addition, the commercial seafood industry includes a substantial contribution from imported fish. To account for these differences, this study uses reports of species fished as reported by NOAA Fisheries to create a more common basis for comparing the relative economic impacts of marine recreational fishing and commercial fishing.

Methodology

This study relies on data, reports and analytical tools provided by the NOAA National Marine Fisheries Service (NOAA Fisheries). Much of the information was taken from the *Fisheries Economics of the U.S. 2011*, report. Detailed species catch information for both recreational and commercial fishing was taken from online query tools available from NOAA Fisheries at <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>. The two types of queries used include the snapshot query and the time series query. A time series query was used to access the species assistance tool. Recreational species harvest data for California, Washington and Oregon were obtained through the RecFIN website provided by the Pacific States Marine Fisheries Commission (<http://www.recfin.org/data/estimates/tabulate-recent-estimates-2004-current>). All species considered, and their assignment to recreational, commercial or both fisheries, is detailed in Appendix A. Estimates of personal income provided by the commercial fishing sector are not available in published reports. NOAA's online Interactive Fisheries Economic Impacts Tool was used to generate a ratio of income to sales for commercial fishing applied to our estimates of commercial sales impacts (<https://www.st.nmfs.noaa.gov:443/apex/>).

There are significant differences in the species of fish targeted by these two types of fishing that create inconsistencies when making direct comparisons. For example, commercial fisheries include baitfish species that are destined for industrial uses rather than consumer products. Commercial harvesters also target species that are largely inaccessible to anglers. Table 3 shows the total commercial landings of finfish and shellfish in the U.S. and sub-regions. Owing to its relatively higher value per pound, shellfish generally accounts for a higher share of landed value than it does of landed weight. Since shellfish are rarely targeted by anglers, this clearly illustrates the importance of making adjustments for species when comparing the relative impacts of recreational and commercial fishing.

Table 3. Total Landings and Value of Landings of all Finfish and Shellfish in the U.S. and sub-regions.

Region	Landings (000's of pounds)				Value of Landings (\$ 000)			
	Finfish	Shellfish	All Fish	Total pounds	Finfish	Shellfish	All Fish	Total Dollars
United States	86%	14%	100%	9,867,148	49%	51%	100%	5,338,063
Alaska	98%	2%	100%	5,272,554	86%	14%	100%	1,911,540
Hawaii	100%	0%	100%	29,289	100%	0%	100%	91,513
Pacific	64%	36%	100%	1,175,506	37%	63%	100%	710,495
New England	57%	43%	100%	622,355	19%	81%	100%	1,109,057
Mid - Atlantic	74%	26%	100%	779,829	23%	77%	100%	527,493
South - Atlantic	40%	60%	100%	123,460	39%	61%	100%	171,302
Gulf of Mexico	82%	18%	100%	1,765,899	24%	76%	100%	818,017

The economic impacts of commercial and recreational fishing are based on fundamentally different economic drivers. The economic impacts of commercial fishing are based on tracking fishery products along the entire value chain from harvesting to the final users. Along the way, fish harvested by commercial fishermen pass through primary dealers and processors, secondary seafood wholesalers and distributors, grocers and/or restaurants. Within each step of the value chain, multiplier effects amplify the economic contributions in terms of output (total sales), jobs, income and value added. With the exception of harvesting, the presence of imported fish can add to the economic impacts of the commercial seafood industry. This report ignores the contribution of imported fish and relies on NOAA Fisheries estimated economic impacts of commercial fishing without imports.

The economic impacts of recreational fishing are driven by the expenditures made by anglers for the goods and services directly related to their fishing activities. The economic activity from direct purchases of fishing equipment and trip-related spending for food, fuel, lodging, etc. supports jobs and income. As angler dollars exchange hands, additional economic contributions result providing a greater level of jobs, income and other benefits. Although the economic drivers of recreational and commercial fishing are different, they both result in common measures that can be compared (sales, jobs, income, value added). When comparing the economics of commercial and recreational fisheries, in most cases the full value chain should be considered, as is done in this report.

The pounds of fish taken by marine anglers include estimates based on observed harvest (type A) and reported harvest (type B1). No adjustments were made to the economic impact estimates reported in NOAA Fisheries' *Fisheries Economics of the U.S. 2011*. For the U.S. and each region, the report includes estimated spending by all anglers. The economic effects of that spending, including multiplier effects, are reported as total economic output (sales), jobs supported, income, and value added (GDP). Species harvested by anglers (based on the NOAA Marine Recreational Information Program (MRIP) Catch Snapshot Query) and commercial harvesters (NOAA Fisheries Annual Commercial Landings by Group query) were compared. In some instances, species common to anglers were only listed as commercial, such as cobia, wahoo and tripletail. In these cases, the species assistant tool, located on the time series query page, was used to properly assign the individual species as these species were frequently not identified when using the snapshot query tool. Known freshwater species were excluded from both commercial and recreational fishing.

The regions used in this study are the same regions used by NOAA Fisheries' *Fisheries Economics of the U.S. 2011* report. The states within each region include:

Pacific - California, Oregon, Washington

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

Mid - Atlantic - Delaware, Maryland, New Jersey, New York, Virginia

South Atlantic - East Florida, Georgia, North Carolina, South Carolina

Gulf of Mexico - Alabama, West Florida, Louisiana, Mississippi, Texas

Alaska and Hawaii are both individual regions.

The NOAA Fisheries report provides separate estimates of total landings (pounds landed) and value of landings for finfish and shellfish and for several key species. However, the commercial sector's economic impacts are based on total finfish and shellfish landings.

Because economic estimates for recreational fishing does not include shellfish and other species that are targeted by commercial harvesters, comparisons of the economic impacts from recreational and commercial fishing are based on distinctly different fisheries. To correct for these differences, several adjustments were made to the commercial landings and associated economic impacts.

The adjustments and calculations are described below.

- Exclude economic impacts associated with imported fish. The NOAA Fisheries report includes a separate estimate of economic impacts in each region that excludes imported fish. Those estimates serve as the basis for all subsequent adjustments and estimates.
- Exclude economic impacts associated with shellfish. All economic impacts including sales, jobs and value added were pro-rated according the proportion of total *value* (not pounds) of landings contributed by finfish.
- Within each region, each commercially harvested species was identified as being targeted only by commercial fishermen or as overlapping with recreational fisheries, using NOAA Fisheries query tools as described previously. The landings (pounds) and value were then summed separately for each of those two groups. The economic impacts were calculated according to the proportion of the value of landings. For example, if "Commercial Only Species" represent 60% of the total landed value (of all commercial species in that region), than 60% of all economic impacts are applied to that group, the other 40% would be applied to the commercial species also sought after by anglers.
- Additional steps were needed for Pacific Region. Estimates of recreational landings (pounds) were not available through the NOAA Fisheries online query tools for the Pacific Region, Western Pacific Region and the Northern Pacific Region.
 - To determine if specific species were fished exclusively by the commercial sector, the detailed lists of commercial species were compared to the list of "Key Species" targeted by anglers included in the NOAA Fisheries' *Fisheries Economics of The U.S. 2011* report. The key species account for the majority of fish targeted by anglers, but in some cases it was not possible to identify if a commercially-harvested species was also targeted by anglers. In this case additional online sources, including NOAA's online Fish Watch Fish Finder, and the species assistance tool located on the time series query page were consulted to make the determination.

- Estimate income generated by commercial fishing. The NOAA Fisheries report includes personal income that is generated by recreational fishing, but does not include income as a measure of economic impact for commercial fishing.
 - NOAA Fisheries provides the “Interactive Fisheries Economic Impacts Tool” as an online service to estimate the economic impacts of commercial and recreational fishing. The tool designed for commercial fisheries includes income as a measure of economic impact.
 - The tool was used to generate impact of commercial fishing in each region, excluding imports. For each region, the ratio of income to total sales was used to estimate the income.
 - For each region, the ratio of income to total sales was used to estimate the income from commercial fishing excluding shellfish.

Results

The following tables include estimates of landings and economic impacts for recreational and commercial fishing for the U.S. and each region. In each table, commercial fishing is further broken down to species fished exclusively by commercial fishermen and species common to recreational and commercial fisheries. Economic impacts based on common species provide the most appropriate basis for comparing the relative contributions of recreational and commercial fishing.

United States

Commercial fishermen in the U.S. harvested 8.5 billion pounds of finfish in 2011 compared to 204.9 million pounds of fish caught by marine anglers^[1]. Commercial landings of species also targeted by recreational fisheries were worth \$2.1 billion. Including multiplier effects, this revenue generated \$20.5 billion in sales impacts, \$7.5 billion in income, \$10.6 billion in value added (GDP), and supported 304,611 jobs.

Marine anglers spent nearly \$27.0 billion in 2011. Including multiplier effects, these purchases resulted in more than \$70.3 billion in sales, \$20.5 billion in income, \$32.5 billion in value added (GDP), and supported over 454,542 jobs.

Table 4. Economic Impacts of the United States Recreational and Commercial Fishing industry (thousands of dollars)

U.S.				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish x 1,000)	204,947	8,480,921	3,626,044	4,854,877
Value of Landings (Commercial)		\$2,582,567	\$515,156	\$2,067,411
Expenditures (Recreational)	\$26,783,311			
Economic Impacts:				
Sales (total multiplier effect)	\$70,315,216	\$25,578,722	\$5,102,304	\$20,476,418
Jobs	454,542	380,513	75,903	304,611
Income	\$20,518,517	\$9,359,032	\$1,866,889	\$7,492,143
Value Added	\$32,471,761	\$13,299,298	\$2,652,871	\$10,646,426

Commercial estimates include only finfish and excludes imports.

Alaska

Commercial fishermen in the Alaska region landed 5.2 billion pounds of finfish in 2011. These landings represent all species targeted by commercial fishermen. Commercial landings of species also targeted by recreational fisheries were worth \$1.3 billion. Including multiplier effects, this revenue generated \$3.1 billion in sales, \$1.3 billion in income, \$1.6 billion in value-added (GDP) and supported 41,422 jobs.

^[1] Does not include fish caught in Alaska or Texas. Estimates of pounds of fish caught by anglers in Alaska and Texas were not identified at the time of the study.

Pounds landed by anglers in Alaska were not available. Anglers spent \$445.5 million in 2011. Including multiplier effects, these purchases resulted in more than \$558.0 million in sales, \$192.5 million in income, \$317.9 million in value added (GDP), and supported 6,291 jobs.

Table 5. Economic Impacts of the Alaska Region Recreational and Commercial Fishing Industry (thousands of dollars)

Alaska				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	N/A	5,187,877	2,905,090	2,282,787
Value of Landings (Commercial)		\$1,648,941	\$391,560	\$1,257,381
Expenditures (Recreational)	\$445,537			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$557,958	\$4,016,320	\$953,722	\$3,062,598
Jobs	6,291	54,321	12,899	41,422
Income	\$192,517	\$1,698,941	\$403,433	\$1,295,508
Value Added	\$317,852	\$2,138,052	\$507,705	\$1,630,346

Commercial estimates include only finfish and excludes imports.

Pacific

Commercial fishermen in the Pacific region harvested 756.3 million pounds of finfish in 2011 compared to 17.1 million pounds of fish caught by anglers. Commercial landings of species that matched those of anglers were worth \$211.4 million. Including multiplier effects, this revenue generated \$1.1 billion in sales, \$455.8 million in income, \$602.8 million in value added (GDP), and supported 17,117 jobs.

Anglers spent over \$1.7 billion in 2011. Including multiplier effects, these purchases resulted in more than \$1.9 billion in sales, \$662.0 million in income, \$1.0 billion in value added (GDP) and supported 15,789 jobs.

Table 6. Economic Impacts of the Pacific Region Recreational and Commercial Fishing Industry (thousands of dollars)

Pacific (CA, OR, WA)				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	17,146	756,280	207,564	548,716
Value of Landings (Commercial)		\$259,796	\$48,424	\$211,372
Expenditures (Recreational)	\$1,673,687			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$1,915,188	\$1,357,575	\$253,043	\$1,104,532
Jobs	15,789	21,038	3,921	17,117
Income	\$662,027	\$560,203	\$104,418	\$455,785
Value Added	\$1,027,588	\$740,919	\$138,102	\$602,816

Commercial estimates include only finfish and excludes imports.

Hawaii

Commercial fishermen in the Hawaiian region harvested 29.3 million pounds of finfish in 2011 compared to 11.7 million pounds of fish caught by anglers. Commercial landings of species that matched those of anglers were worth \$86.9 million. Including multiplier effects, this revenue generated \$345.9 million in sales, \$137.0 million in income, \$186.0 million in value added (GDP), and supported 6,333 jobs.

Anglers spent over \$284.9 million in 2011. Including multiplier effects, these purchases resulted in more than \$309.9 million in sales, \$101.2 million in income, \$156.6 million in value added (GDP), and supported 2,948 jobs.

Table 7. Economic Impacts of the Hawaii Region Recreational and Commercial Fishing Industry (thousands of dollars)

Hawaii				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	11,658	29,269	2,051	27,217
Value of Landings (Commercial)		\$91,354	\$4,411	\$86,943
Expenditures (Recreational)	\$284,912			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$309,923	\$363,440	\$17,549	\$345,891
Jobs	2,948	6,654	321	6,333
Income	\$101,185	\$143,967	\$6,952	\$137,015
Value Added	\$156,595	\$195,414	\$9,436	\$185,978

Commercial estimates include only finfish and exclude imports.

New England

Commercial fishermen in New England harvested 353.4 million pounds of finfish in 2011 compared to 23.9 million pounds of fish caught by anglers. Commercial landings of species that matched those of anglers were worth \$182.8 million. Including multiplier effects, this revenue generated \$720.8 million in sales, \$258.4 million in income, \$360.3 million in value added (GDP), and supported over 16,608 jobs.

Anglers spent over \$1.1 billion in 2011. Including multiplier effects, these purchases resulted in \$1.2 billion in sales, \$388.3 million in income, \$602.0 million in value added (GDP), and supported 8,723 jobs.

Table 8. Economic Impacts of the New England Region Recreational and Commercial Fishing Industry (thousands of dollars)

New England (CT, ME, MA, NH, RI)				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	23,928	353,371	23,994	329,377
Value of Landings (Commercial)		\$211,139	\$28,364	\$182,775
Expenditures (Recreational)	\$1,164,826			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$1,130,272	\$832,613	\$111,851	\$720,762
Jobs	8,723	19,185	2,577	16,608
Income	\$388,307	\$298,543	\$40,105	\$258,437
Value Added	\$601,993	\$416,249	\$55,918	\$360,332

Commercial estimates include only finfish and excludes imports.

Mid – Atlantic

Commercial fishermen in the Mid-Atlantic region harvested 570.9 million pounds of finfish in 2011 compared to 41.8 million pounds of fish caught by anglers. Commercial landings of species that matched those of anglers were worth \$105.2 million. Including multiplier effects, this revenue generated \$451.8 million in sales, \$162.6 million in income, \$224.9 million in value added (GDP), and supported 7,373 jobs.

Anglers spent \$3.7 billion in 2011. Including multiplier effects, these purchases resulted in more than \$3.8 billion in sales, \$1.3 billion in income, \$2.0 billion in value added (GDP), and supported 26,714 jobs.

Table 9. Economic Impacts of the Mid - Atlantic Region Recreational and Commercial Fishing Industry (thousands of dollars)

Mid - Atlantic (DE, MD, NJ, NY, VA)				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	41,838	570,872	10,962	559,910
Value of Landings (Commercial)		\$120,215	\$15,047	\$105,168
Expenditures (Recreational)	\$3,686,643			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$3,804,715	\$516,497	\$64,648	\$451,849
Jobs	26,714	8,428	1,055	7,373
Income	\$1,260,982	\$185,912	\$23,270	\$162,642
Value Added	\$1,969,032	\$257,048	\$32,174	\$224,874

Commercial estimates include only finfish and excludes imports.

South Atlantic

Commercial fishermen in the South Atlantic region harvested 48.5 million pounds of finfish in 2011 compared to 35.6 million pounds caught by anglers. Commercial landings of species that matched those of anglers were worth \$60.2 million. Including multiplier effects, this revenue generated \$478.6 million in sales, \$152.5 million in income, \$215.2 million in value-added (GDP) and supported 6,803 jobs.

Anglers spent \$6.1 billion in 2011. Including multiplier effects, these purchases resulted in more than \$5.8 billion in sales, \$1.9 billion in income, \$3.0 billion in value-added (GDP) and supported 52,572 jobs.

Table 10. Economic Impacts of the South - Atlantic Region Recreational and Commercial Fishing Industry (thousands of dollars)

South - Atlantic (East FL, GA, NC, SC)				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	35,568	48,518	11,587	37,546
Value of Landings (Commercial)		\$65,972	\$5,757	\$60,215
Expenditures (Recreational)	\$6,064,180			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$5,847,709	\$524,327	\$45,755	\$478,572
Jobs	52,572	7,453	650	6,803
Income	\$1,912,650	\$167,127	\$14,584	\$152,543
Value Added	\$2,994,415	\$235,736	\$20,571	\$215,165

Commercial estimates include only finfish and excludes imports.

Gulf of Mexico

Commercial fishermen in the Gulf of Mexico region harvested 1.4 billion pounds of finfish in 2011 compared to 74.8 million pounds of fish caught by anglers⁶. Commercial landings of species that matched those of anglers were worth \$186.5 million. Including multiplier effects, this revenue generated \$1.0 billion in sales, \$360.0 billion in income, \$494.0 billion in value-added (GDP), and supported 18,131 jobs.

Anglers spent \$9.8 billion in 2011. Including multiplier effects, these purchases resulted in more than \$9.3 billion in sales, \$3.1 billion in income, \$4.9 billion in value-added (GDP), and supported 89,319 jobs.

⁶ Does not include fish caught in Texas. Estimates of pounds of fish caught by anglers in Texas were not identified at the time of the study.

Table 11. Economic Impacts of the Gulf of Mexico Region Recreational and Commercial Fishing Industry (thousands of dollars)

Gulf of Mexico (AL, West FL, LA, MS, TX)				
Type of Fishing	All Recreational Species	All Commercial Finfish Species Fishing	Commercial Finfish Only - No Recreational Species	Commercial Landings of Species Also Sought by Anglers
Landings (lbs of fish, x 1,000)	74,809	1,437,640	8,459	1,429,181
Value of Landings (Commercial)		\$190,888	\$4,401	\$186,488
Expenditures (Recreational)	\$9,782,144			
<u>Economic Impacts:</u>				
Sales (total multiplier effect)	\$9,281,154	\$1,028,338	\$23,707	\$1,004,631
Jobs	89,319	18,558	428	18,131
Income	\$3,124,358	\$368,473	\$8,495	\$359,978
Value Added	\$4,883,267	\$505,659	\$11,657	\$494,002

Commercial estimates include only finfish and excludes imports.

Appendix A: List of Species by Category

Species Caught by Both Commercial & Recreational Sectors

AFS Species Name

AMBERJACK	GLASSEYE SNAPPER	MACKEREL, FRIGATE
AMBERJACK, GREATER	GOATFISHES	MACKEREL, KING
AMBERJACK, LESSER	GOOSEFISH	MACKEREL, KING AND CERO
ANCHOVY, NORTHERN	GREENLING, KELP	MACKEREL, SPANISH
ATKA MACKEREL	GROUPEL, BLACK	MARGATE
BALLYHOO	GROUPEL, RED	MARLIN, BLACK
BARRACUDA, PACIFIC	GROUPEL, SNOWY	MARLIN, BLUE
BARRACUDAS	GROUPEL, WARSAW	MARLIN, STRIPED
BASS, ROCK	GROUPEL, YELLOWEDGE	MENHADEN
BASS, STRIPED	GROUPEL, YELLOWFIN	MOONFISH, ATLANTIC
BIGEYE	GROUPERS	MULLET, STRIPED (LIZA)
BILLFISHES	GRUNT, TOMTATE	MULLET, WHITE
BLUEFISH	GRUNT, WHITE	MULLETS
BONITO, ATLANTIC	GRUNTS	PARROTFISHES
BONITO, PACIFIC	HADDOCK	PERCH, WHITE
BUTTERFISH	HAKE, ATLANTIC, RED/WHITE	PERCH, YELLOW
COBIA	HAKE, OFFSHORE SILVER	PERMIT
COD, ATLANTIC	HAKE, RED	PIGFISH
COD, PACIFIC	HAKE, SILVER	PINFISH
CONEY	HAKE, WHITE	PINFISH, SPOTTAIL
CREOLE-FISH (investigate)	HALIBUT, ATLANTIC	POLLOCK
CROAKER, ATLANTIC	HALIBUT, CALIFORNIA	POMPANO, AFRICAN
CROAKER, PACIFIC WHITE	HALIBUT, GREENLAND	POMPANO, FLORIDA
CUNNER	HALIBUT, PACIFIC	PORGY, JOLTHEAD
CUSK	HARVESTFISH	PORGY, KNOBBED
CUTLASSFISH, ATLANTIC	HERRING, ATLANTIC	PORGY, LONGSPINE
DOLPHINFISH	HERRING, ATLANTIC THREAD	PORGY, RED
DRUM, BLACK	HERRING, BLUEBACK	POUT, OCEAN
DRUM, RED	HERRING, LAKE OR CISCO	PUFFER, NOTHERN
DRUMS	HERRING, PACIFIC	PUFFERS
EEL, AMERICAN	HERRING, ROUND	RAY, COWNOSE
EEL, CONGER	HERRINGS	RAY, STINGRAYS
EELS	HIND, RED	RAYS
EELS, SNAKE	HIND, ROCK	REDFISH, ACADIAN
FLATFISH	HIND, SPECKLED	ROCKFISH, AURORA
FLOUNDER, ARROWTOOTH	HOGFISH	ROCKFISH, BANK
FLOUNDER, FOURSPOT	JACK, ALMACO	ROCKFISH, BLACK-AND-YELLOW
FLOUNDER, PACIFIC, SANDDAB	JACK, BAR	ROCKFISH, BLACKGILL
FLOUNDER, SOUTHERN	JACK, BLACK	ROCKFISH, BLUE
FLOUNDER, STARRY	JACK, CREVALLE	ROCKFISH, BOCACCIO
FLOUNDER, SUMMER	JACKS	ROCKFISH, BROWN
FLOUNDER, WINDOWPANE	JOBFISH, GREEN (UKU)	ROCKFISH, CANARY
FLOUNDER, WINTER	KING WHITING	ROCKFISH, CHILIPEPPER
FLOUNDER, WITCH	KINGFISH, NORTHERN	ROCKFISH, CHINA
FLOUNDER, YELLOWTAIL	LADYFISH	ROCKFISH, COPPER
FLOUNDER, ATLANTIC, PLAICE	LANCE, AMERICAN SAND	ROCKFISH, COWCOD
FLOUNDER, PACIFIC, SANDDAB	LINGCOD	ROCKFISH, DARKBLOTCHED
FLOUNDERS, RIGHTEYE	LOOKDOWN	ROCKFISH, FLAG
GAG	MACKEREL, ATLANTIC	ROCKFISH, GOPHER
GARS	MACKEREL, CHUB	ROCKFISH, GRASS

Species Caught by Both Commercial & Recreational Sectors (continued)

AFS Species Name		
ROCKFISH, GREENBLOTCHED	SEATROUT, SPOTTED	SOLE, DOVER
ROCKFISH, GREENSPOTTED	SHAD, AMERICAN	SOLE, ENGLISH
ROCKFISH, GREENSTRIPED	SHAD, HICKORY	SOLE, FLATHEAD
ROCKFISH, HONEYCOMB	SHARK, ATLANTIC SHARPNOSE	SOLE, PETRALE
ROCKFISH, KELP	SHARK, BIGEYE THRESHER	SOLE, SAND
ROCKFISH, OLIVE	SHARK, BLACKNOSE	SOLE, SLENDER
ROCKFISH, PACIFIC OCEAN PERCH	SHARK, BLACKTIP	SOLE, YELLOWFIN
ROCKFISH, REDBANDED	SHARK, BLUE	SPADEFISHES
ROCKFISH, ROSY	SHARK, BONNETHEAD	SPEARFISHES
ROCKFISH, SILVERGRAY	SHARK, BULL	SPOT
ROCKFISH, SPECKLED	SHARK, DOGFISH	SQUIRRELFISHES
ROCKFISH, SPLITNOSE	SHARK, FINETOOTH	STARGAZER, NOTHERN
ROCKFISH, STARRY	SHARK, HAMMERHEAD	STURGEON, WHITE
ROCKFISH, TREEFISH	SHARK, LEMON	SUNFISHES
ROCKFISH, VERMILION	SHARK, LEOPARD	SURFPERCHES
ROCKFISH, WIDOW	SHARK, MAKOS	SURGEONFISHES
ROCKFISH, YELLOWEYE	SHARK, PACIFIC ANGEL	SWORDFISH
ROCKFISH, YELLOWMOUTH	SHARK, SAND TIGER	TAUTOG
ROCKFISH, YELLOWTAIL	SHARK, SANDBAR	THREADFINS
ROCKFISHES	SHARK, SHORTFIN MAKO	THRESHER SHARKS
ROSEFISH, BLACKBELLY	SHARK, SILKY	TILEFISH, BLUELINE
RUDDERFISH, BANDED	SHARK, SMOOTH DOGFISH	TILEFISH, SAND
RUNNER, BLUE	SHARK, SOUPFIN	TILEFISHES
RUNNER, RAINBOW	SHARK, SPINNER	TOADFISHES
SABLEFISH	SHARK, SPINY DOGFISH	TRIGGERFISH, GRAY
SAILFISH	SHARK, THRESHER	TRIPLETAIL
SALMON, CHINOOK	SHARK, TIGER	TUNA, ALBACORE
SALMON, CHUM	SHARKS	TUNA, BIGEYE
SALMON, COHO	SHEEPSHEAD	TUNA, BLACKFIN
SALMON, PINK	SKATE, BIG	TUNA, BLUEFIN
SALMON, SOCKEYE	SKATE, CALIFORNIA	TUNA, BLUEFIN PACIFIC
SARDINE, SPANISH	SKATE, LITTLE	TUNA, KAWAKAWA
SCAD, BIGEYE	SKATES	TUNA, LITTLE TUNNY
SCAD, MACKEREL	SMELT, RAINBOW	TUNA, SKIPJACK
SCADS	SMELTS	TUNA, YELLOWFIN
SCAMP	SNAPPER, BLACK	TUNAS
SCORPIONFISHES	SNAPPER, BLACKFIN	WAHOO
SCULPINS	SNAPPER, CUBERA	WEAKFISH
SCUP	SNAPPER, DOG	YELLOWTAIL JACK
SCUPS OR PORGIES	SNAPPER, GRAY	
SEA BASS, BANK	SNAPPER, LANE	
SEA BASS, BLACK	SNAPPER, MUTTON	
SEA BASS, GIANT	SNAPPER, QUEEN	
SEA BASS, ROCK	SNAPPER, RED	
SEA CATFISHES	SNAPPER, SILK	
SEA CHUBS	SNAPPER, VERMILION	
SEA RAVEN	SNAPPER, YELLOWTAIL	
SEABASS, WHITE	SNAPPERS	
SEAROBINS	SOLE, BUTTER	
SEATROUT, SAND	SOLE, CURLFIN	

Species Caught by the Commercial Sector Only

AFS Species Name

ALEWIFE	MUMMICHOG
ALFONSIN	OCEAN SUNFISH
BARRELFISH	OILFISH
BASS, LONGTAIL	OPAH
BROTULA, BEARDED	POLLOCK, WALLEYE
BURBOT	POMFRETS
CABEZON	PRICKLEBACK, MONKEYFACE
DEALFISH	QUILLBACK
DORY, AMERICAN JOHN	ROCKFISH, BLACK
EMPERORS	SARDINE, PACIFIC
ESCOLAR	SHARK, OCEANIC WHITETIP
FINFISHES, UNC BAIT AND ANIMAL FOOD	SHEEPHEAD, CALIFORNIA
FINFISHES, UNC FOR FOOD	SILVERSIDES
FINFISHES, UNC GENERAL	SKIPPERS
FLYINGFISHES	SMELT, EULACHON
GRENADIERS	SOLE, DEEPSEA
HAGFISHES	SOLE, REX
HAKE, PACIFIC (WHITING)	SOLE, ROCK
JACK MACKEREL	SUCKERS
JACK, HORSE-EYE	TARPON, HAWAIIAN
LEATHER-BACK	THORNYHEAD, LONGSPINE
LEATHERJACKETS	THORNYHEAD, SHORTSPINE
LIONFISH	TILEFISH, GOLDEN
MACKEREL (SCOMBER)	TURBOT, HORNYHEAD
MILKFISH	WHITEFISH, ROUND
MOJARRAS	WOLF-EEL

Freshwater Species

Not included in analysis (Removed from lists)

BASS, WHITE	CRAPPIE
BOWFIN	DRUM, FRESHWATER
BUFFALOFISHES	GOLDFISH
BULLHEAD, BROWN	SHAD, GIZZARD
CARP, COMMON	SNAKEHEAD, NORTHERN
CARP, GRASS	TILAPIAS
CARPS AND MINNOWS	TROUT, LAKE
CATFISH, BLUE	TROUT, RAINBOW
CATFISH, CHANNEL	WALLEYE
CATFISH, FLATHEAD	WHITEFISH, LAKE
CATFISHES & BULLHEADS	