



Progress Toward Sustainable Seafood – *By the Numbers*

June 2020 Edition

the David & Lucile Packard FOUNDATION

CEA CONSULTING

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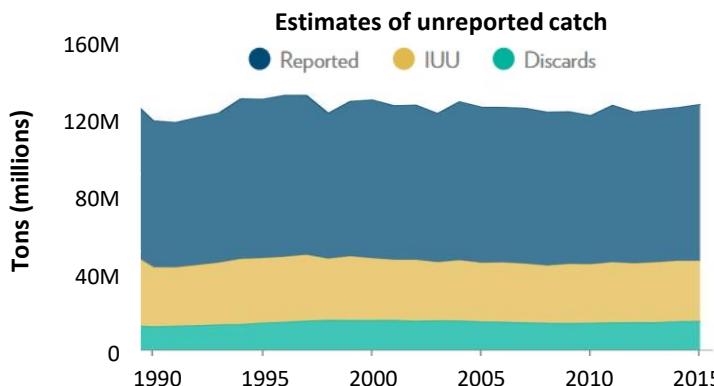
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Global seafood consumption
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Executive Summary: The State of the Global Ocean and Production

Global marine capture landings remain relatively stable according to official landings data. While it is difficult to accurately account for illegal, unreported, and unregulated (IUU) catch, those that attempt to do so suggest global landings have declined from their peak in the mid-1990s. IUU catch estimates increase Food and Agriculture Organization of the United Nations (FAO) reported global landings by 20-35%. As a result, the number of overexploited or collapsed stocks continues to climb steadily and the latest estimate suggests four in 10 stocks are considered beyond full exploitation. Globally, estimated economic losses from IUU fishing range from \$26-50 billion, with individual country losses as high as \$4 billion.

Stocks in less developed countries and unassessed stocks appear to be decreasing in abundance. Stock assessment data is unavailable for roughly half of global marine fish catch, posing considerable challenges for fisheries managers. However, stock biomass trends upwards and fishing pressure downwards in more developed countries with higher capacity for effective fisheries management (e.g., good management, enforcement) and for stocks that are assessed.



Source: Meta data from: Watson, Reg A., and A. Tidd. "Mapping Nearly a Century and a Half of Global Marine Fishing: 1869–2015." *Marine Policy* 93 (July 2018): 171–77.

Regionally, many stocks in the U.S. are improving, while most E.U. stocks suffer from overfishing. In the U.S., 9% of stocks designated as federally important are subject to overfishing, down from 26% in 2006 when the Magnuson-Stevens Act was reauthorized. In total, 18% of stocks are considered overfished, down from 28%. In the E.U. fisheries, health appears to be declining. 51% of stocks are suspected to be engaged in overfishing, up considerably from 2013's historic low of 39%, with the Mediterranean and Black Seas remaining poorly assessed and vulnerable to overfishing. 78% of stocks in the Mediterranean and Black Seas are fished at biologically unsustainable levels.

Asia, led by China, leads in wild capture and aquaculture production. Asia accounts for 51% of global wild caught production, with China accounting for 16% of global production. Total aquaculture production has surpassed total wild capture production, with freshwater species grown in Asia representing most farmed fish produced. China is the leading aquaculture producer globally, producing 57% of the world's aquaculture, with the rest of Asia accounting for much of the remainder.

In recent decades, distant water fishing has trended upwards, accounting for 23% of global catch in 2014, compared to 16% in 1950. China, Taiwan, South Korea, and Spain account for over 60% of distant water landings. More than half of high-seas fishing would not be economically viable without government subsidies, particularly in China, Taiwan, and Russia.

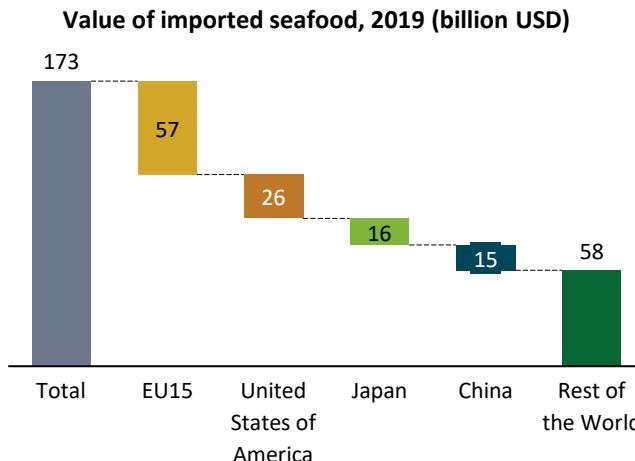
Market-based initiatives have made relatively few inroads into improving the sustainability of small-scale fisheries. These fisheries contribute almost half of global fishery landings and employ 88% of marine fisheries and workers. They also typically operate in regions with limited infrastructure and weak government capacity and regulations.

Executive Summary: Consumption, Trade, and Initiatives to Combat IUU fishing

China's seafood consumption remains the highest globally and is three times higher than the next largest consumer, Indonesia. Seafood consumption has been on the decline in the U.S. since 2014 for most species, except for shrimp.

The quantity of globally traded seafood continues to grow. Markets such as South and Southeast Asia are among the fastest growing importers of communities like shrimp and tuna, where imported seafood may be processed and destined for re-export to higher value markets.

Markets with a strong demand for sustainable seafood, such as North America and Northern Europe, continue to account for the majority of global seafood imports by value in 2019, although this includes intra-continental trade that does not have leverage on producer countries in need of fisheries management improvements in less developed countries.



Source: TradeMap.org, grouped for all seafood commodities

Globally, 66 countries have committed to the Port State Measures Agreement to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, the first legally binding international agreement targeting IUU fishing, which was adopted in 2009 and entered into force in 2016.

The E.U., U.S., and Japan are taking different policy approaches to address IUU fishing. The E.U.'s anti-IUU Regulation continues to issue yellow and red cards to countries that do not meet minimum requirements. Currently, three countries have active red-cards and seven countries have active yellow-cards. In the U.S., the Seafood Import Monitoring Program, established in 2016, needs more robust implementation to address loopholes. In Japan, in 2018, the first revision to the National Fisheries Act since its establishment in 1949 will introduce individual quotas. Japan is currently developing its trade policy.

The sustainable seafood community has also turned to accountability and transparency initiatives outside of policy

to address IUU fishing, such as the Ocean Disclosure Project and Global Fishing Watch. These groups and others are actively engaging industry to disclose their seafood sourcing and are publicly tracking the world's largest fishing vessels that use automatic identification systems to combat IUU fishing and increase industry and government accountability.

Active yellow and red cards

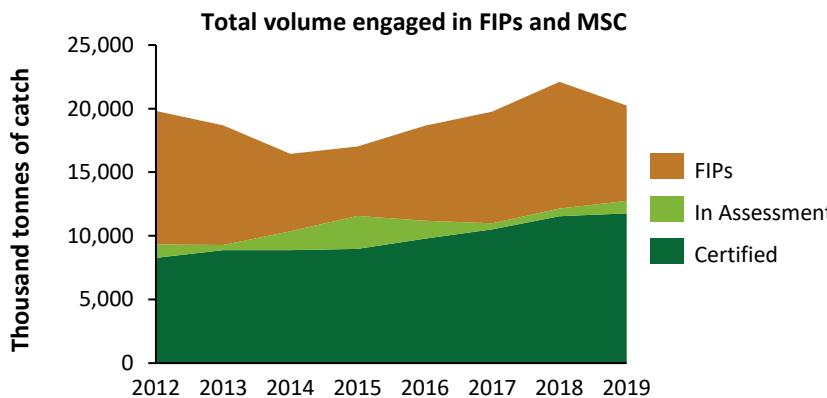
Country	Card
Cambodia	Red
Comoros	Red
St. Vincent and Grenadines	Red
Ecuador	Yellow
Kiribati	Yellow
Panama	Yellow
Sierra Leone	Yellow
St. Kitts and Nevis	Yellow
Trinidad and Tobago	Yellow
Vietnam	Yellow

Executive Summary: Certifications, Ratings & Improvement Efforts, Industry Leadership, and Human Well-Being

About 25% of global production is Marine Stewardship Council (MSC) or Aquaculture Stewardship Council (ASC) certified or Monterey Bay Aquarium Seafood Watch green-rated, with the remaining volume unassessed, needing of improvement, or actively improving.

Of wild-caught seafood production, almost 30% is certified, rated, or in a Fishery Improvement Project (FIP). While the number of fisheries engaged with MSC and FIPs have grown steadily over the past decade, a more accurate reporting of FIP volume in 2019 has resulted in a decrease in total FIP volume. Peru and the United States report the highest engagement in FIPs and MSC by volume. As of the end of 2019, there were 136 active FIPs.

Global Aquaculture Alliance and ASC continue to scale their plant and farm certifications, and these certifications represent roughly 5% of global farmed seafood production. In terms of ratings for aquaculture, 39% is green rated, 28% of which is farmed aquatic plants.



Sources: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020. Landings exclude landings associated with Prospective FIPs (i.e., Stage 0, Stage 1), and Completed FIPs (e.g., MSC-certified).

The sustainable seafood commitment landscape in North America and Europe looks roughly the same as 5 years ago, with most top retailers partnered with Conservation Alliance for Seafood Solutions (Conservation Alliance) NGOs. Major buyers in the hotel chain and casual dining sectors have made new commitments to sourcing sustainable seafood. However, there were no new commitments amongst the top global food distributors, contract catering companies, and fast food chains. For now, Greenpeace is focused on producing its U.S. Food Service Sustainability Scorecard, where it assigned only three companies a passing score in 2018. Commitment tracking and progress verification against commitments remains both challenging and a priority for the community.

Mid-supply chain companies are primarily engaging with sustainable seafood efforts through precompetitive platforms. While these platforms' approaches and objectives vary and remain promising examples of industry leadership, the effectiveness of these platforms will need to be assessed against clear success metrics to understand their progress and impact.

Human well-being is among the fast-growing topics of concern within the sustainable seafood community, and at least 40 organizations are now working in this space. Various FIP implementers, frameworks, certifications, assessment tools and methodologies, and policies seek to address the intersection of social well-being and seafood. Fair Trade USA is a leading organization operating in this space, having certified 12 fisheries and one aquaculture farm since 2014. Additionally, the Conservation Alliance has established guidelines to encourage FIPs to address social challenges within their fisheries, consistent with the revised Alliance Common Vision and Monterey Framework for Social Responsibility in Fisheries.

Overview of Seafood Metrics Report

PURPOSE

- Continue consistent tracking effort to monitor the impact of sustainable seafood initiatives on the global seafood market
- Update and build upon previous reports (2008, 2010, 2013, 2015, 2017)
- Aggregate and provide all readily available data on sustainable seafood efforts and impacts to the conservation community
- Inform long-term adjustments to strategy and other market-based approaches to addressing environmental issues

METHODOLOGY

- Simple, quantitative, and replicable
- Included a survey of conservation community to update existing datasets as well as identify and baseline new relevant datasets
- Conducted a scan of relevant, publicly available data

LIMITATIONS

- Difficult to attribute direct cause-and-effect relationships given the market orientation of grantee tools
- Quality, timeliness, and availability of data
- Limited time series data in some cases

Overview of Seafood Metrics Report

1

IMPACT ON THE WATER

2

PRODUCER-LEVEL PROGRESS

3

CONSUMPTION & TRADE DYNAMICS

4

BUSINESS RELATIONSHIPS & SUPPLY CHAIN
ENGAGEMENT

5

CONDITIONS FOR BUSINESS CHANGE

6

POLICY CHANGE

IMPACT ON THE WATER

Key takeaways

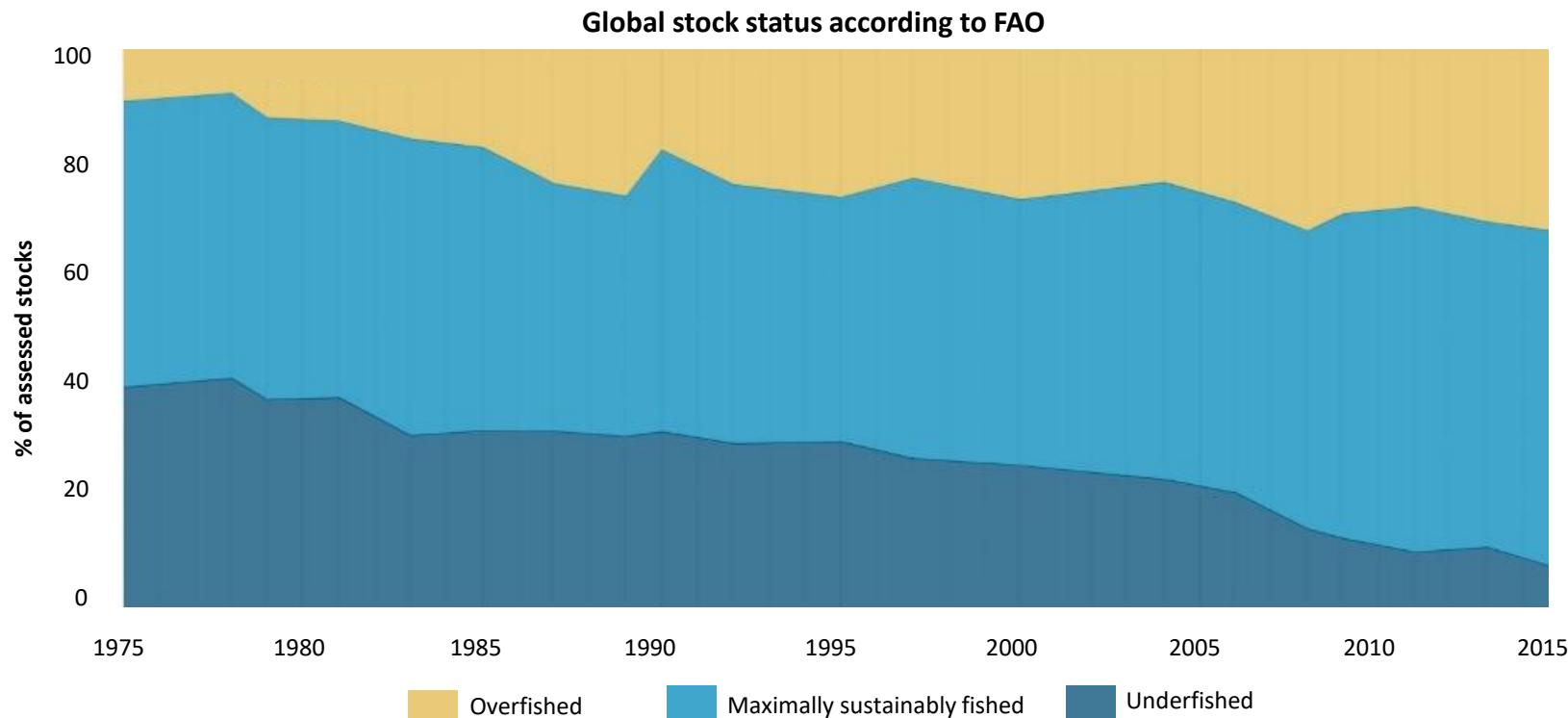
- Assessing global stock statuses continues to be a challenge; it is estimated that 30-40% of global stocks are overfished or collapsed. IUU likely contributes to 20-25% of global landings in recent catch reconstruction estimates, which accounts for economic losses of \$26-\$50 billion annually. Stock biomass trends upwards in more developed countries, and downward in less developed countries.
- The Fisheries Management Index scores continue to hold a strong positive correlation with GDP per capita and a negative correlation with fishing capacity-enhancing subsidies. Suboptimal fisheries management results in significant economic losses for countries.
- In the U.S., the number of fisheries experiencing overfishing has decreased by more than half since the 2006 reauthorization of the Magnuson-Stevens Act; of managed stocks designated as federally important, 9% are subject to overfishing. The E.U. continues to face challenges in ending overfishing and rebuilding stocks, with the majority of Mediterranean and Black Seas stocks fished at biologically unsustainable levels.
- Most high-seas fishing would not be economically viable without government subsidies. Distant water fishing continues to be dominated by China, Taiwan, South Korea, and Spain, all of which receive government subsidies, posing challenges for the sustainable management of wild-caught fisheries.
- Total aquaculture production (including plants) exceeds total wild-capture production. Asia accounted for over half of global wild-capture production in 2017, and China is the world's leading aquaculture producer.

METRICS INCLUDED:

Global status and trends in fishery health and exploitation

The State of World Fisheries and Aquaculture: 93% of assessed stocks are at or beyond full exploitation globally

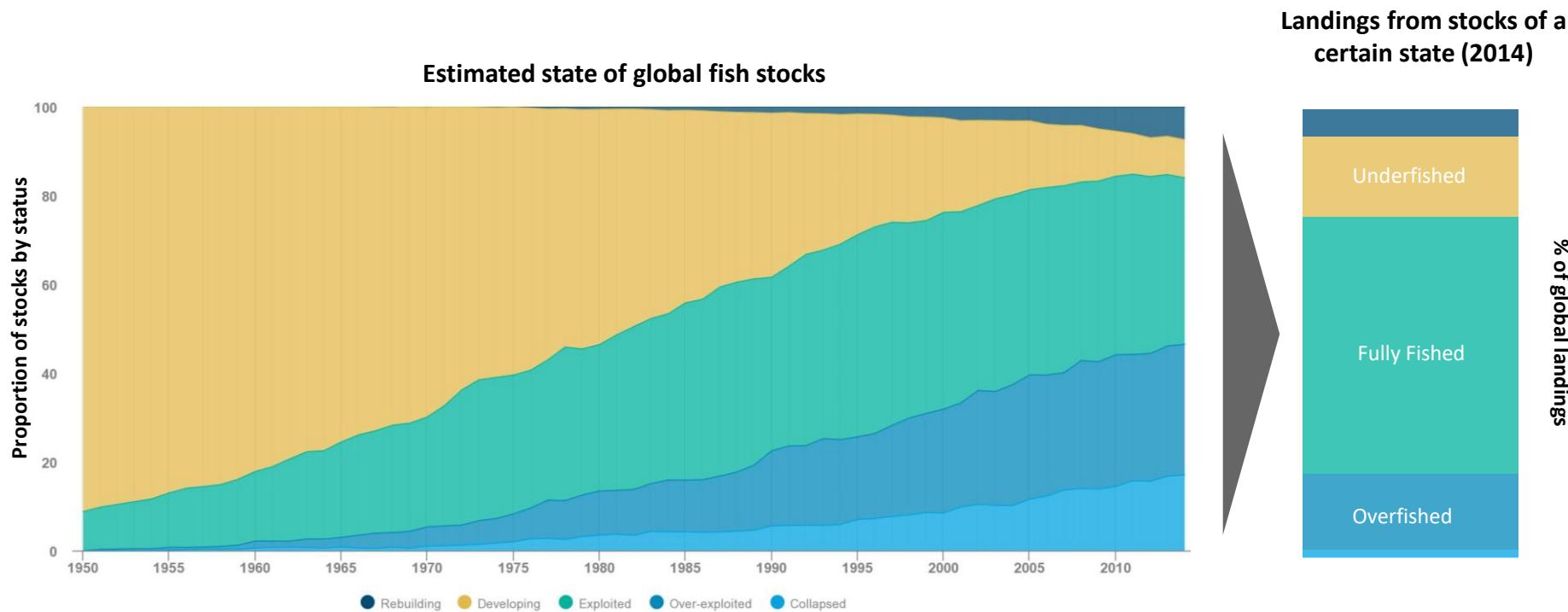
While the Food and Agriculture Organization of the United Nations (FAO) State of World Fisheries and Aquaculture (SOFIA) report suggests the overall volume of global marine capture landings has not fluctuated significantly over the past thirty years, global stock health has declined considerably over that time. The number of overfished stocks increased from 10% to 33% from 1975 to 2015, while underfished stocks fell from 40% to just 7% in that same time. Furthermore, stock status in less developed countries has worsened at the same time it has improved significantly in more developed countries. Most stocks remain unassessed, and more than half of monitored fisheries are depleted to the point of yielding little or no catch.



Source: CEA Consulting. 2019. "Our Shared Seas: Global ocean data and trends for informed action and decision-making."; Adapted from FAO, SOFIA, 2018. FAO Fisheries and Aquaculture Department, *FishStatJ — Software for Fishery Statistical Time Series*, updated July 21, 2016.

Sea Around Us: 40% of stocks may be overfished or collapsed

Pauly et al. (2015) estimate that **40% of stocks are overexploited or collapsed**, using catch history to estimate the status of both assessed and unassessed stocks globally. Available data suggests that in places where fisheries management is sufficient, managed stocks are improving and overfishing is decreasing.



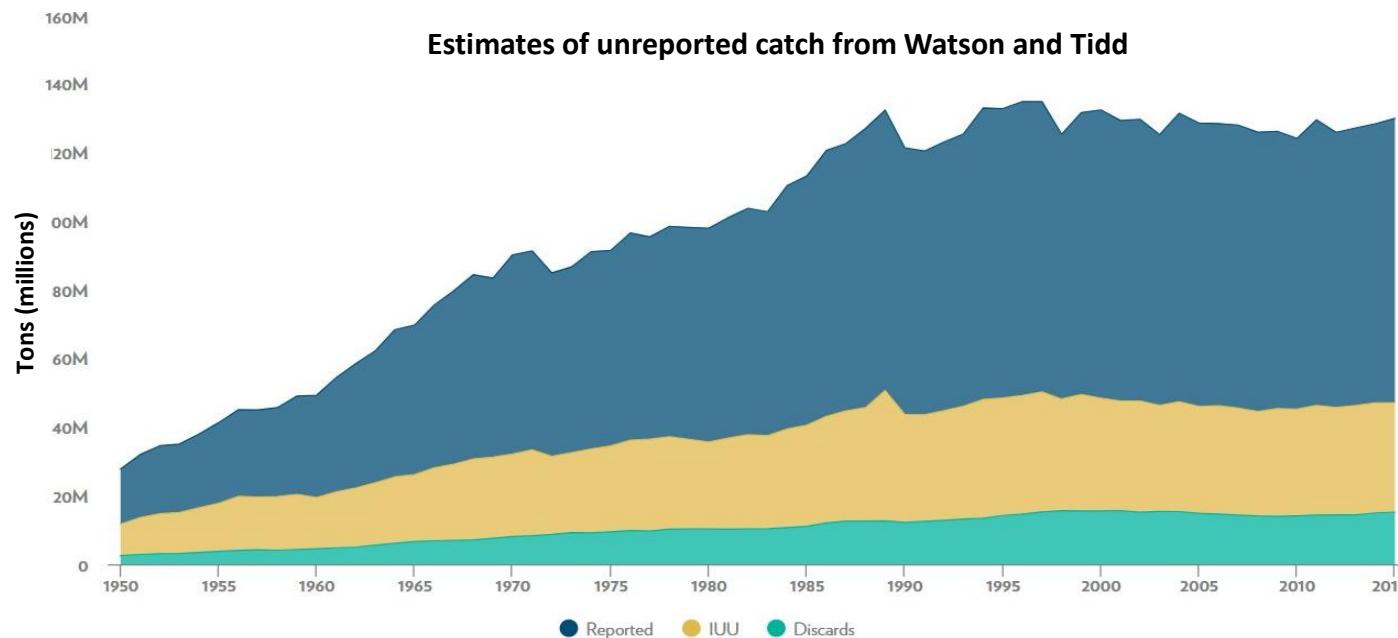
Sources: CEA Consulting. 2019. “Our Shared Seas: Global ocean data and trends for informed action and decision-making.”; Adapted from Pauly D. and Zeller D., editors. *Sea Around Us Concepts*, Design and Data, 2015.; Rosenberg et al. “Applying a New Ensemble Approach to Estimating Stock Status of Marine Fisheries around the World.” Conservation Letters, January/February 2018, 11(1), 1–9.

While sources vary on unreported catch, it's likely that 20-25% of global landings are illegal, unreported, or unregulated

Agnew et al. (2009) estimate that 20% of global fish catch, representing 11-26 million metric tonnes (MMT) of landings, is caught illegally, accounting for an annual economic loss of \$10-23.5 billion. According to data from Watson and Tidd (2018), IUU accounted for about 25% of landings in 2015 (representing 32 MMT) and this level has been relatively stable in recent years.

Newly published findings by Sumaila et al. (2020) suggest that IUU traded seafood accounts for 8-14 MMT annually, with an associated revenue of \$9-\$17 billion. Estimated economic loss from IUU fishing could be \$26-\$50 billion, with losses for individual countries as high as \$2-\$4 billion.

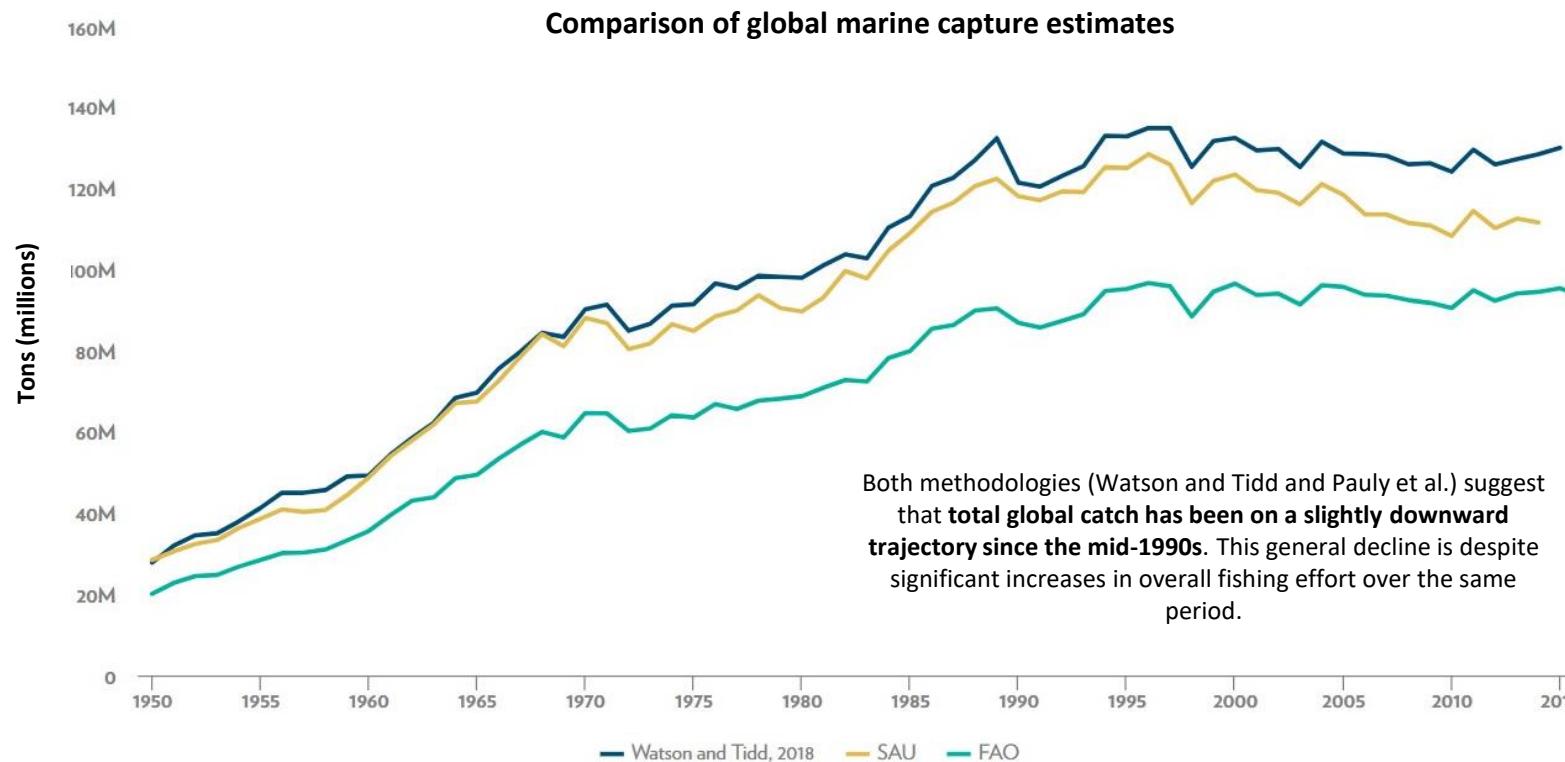
While these figures represent the best available global estimates, accurately determining the scale of IUU is a challenge, which is one reason for the wide confidence intervals.



Sources: Adapted from Watson, Reg A., and A. Tidd. "Mapping Nearly a Century and a Half of Global Marine Fishing: 1869–2015."; Agnew, David J, John Pearce, Ganapathiraju Pramod, Tom Peatman, Reg Watson, and Tony J Pitcher. "Estimating the Worldwide Extent of Illegal Fishing." *PLoS ONE* 4, no. 2 (2009): 8.; CEA Consulting. 2019. "Our Shared Seas: Global ocean data and trends for informed action and decision-making."; U. R. Sumaila, D. Zeller, L. Hood, M. L. D. Palomares, Y. Li and D. Pauly. Illicit trade in marine fish catch and its effects on ecosystems and people worldwide. *Science Advances*, 2020.

Watson and Tidd's fisheries landing database shows higher catch reconstructions than catch reported by FAO and SAU

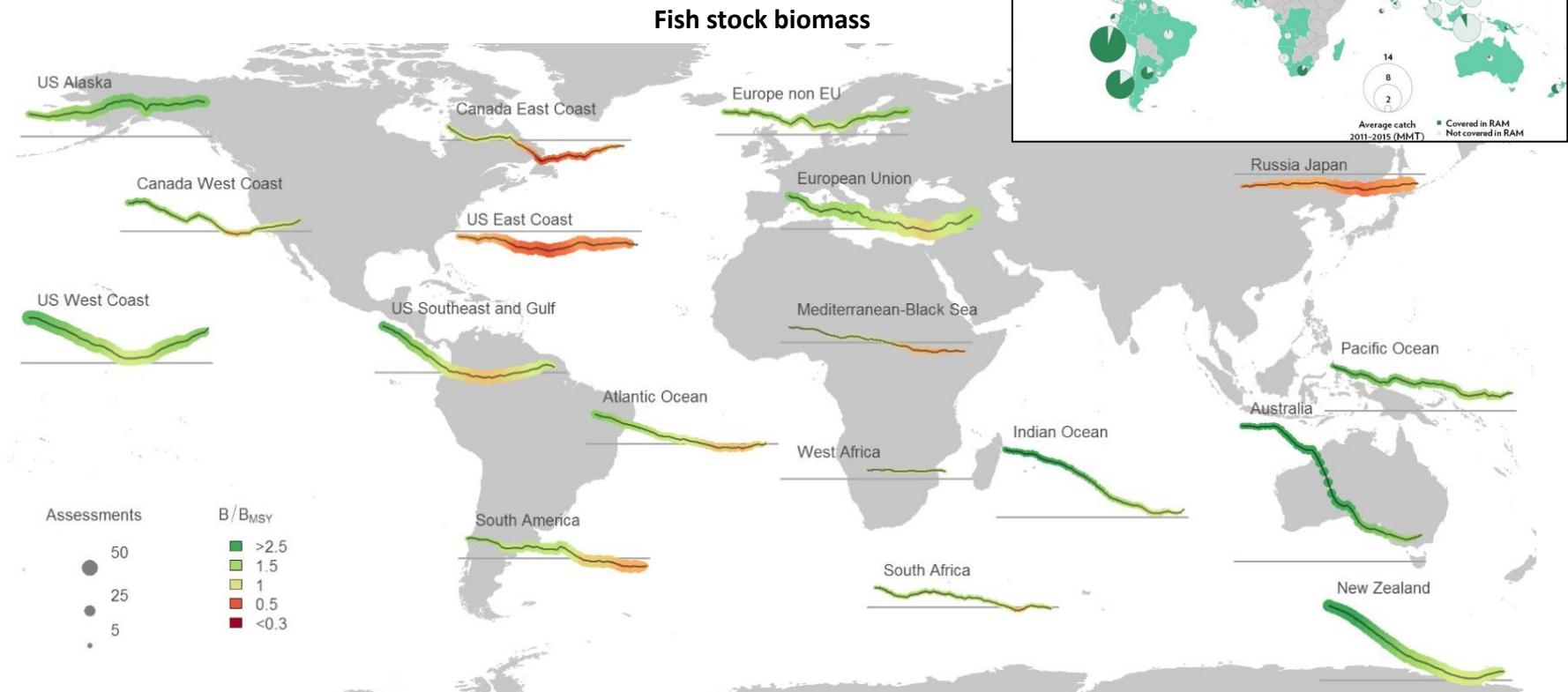
The FAO determines landings primarily based on self-reporting by country governments, while Seas Around Us (SAU) and Watson and Tidd (2018) attempt to correct for possible gaps in this approach by using catch reconstruction methodologies including categories such as artisanal landings, discards, and illegal fishing. Incorporating these unreported categories of catch places global landings approximately 20-35% higher than FAO's officially reported figures.



Source: CEA Consulting. 2019. "Our Shared Seas: Global ocean data and trends for informed action and decision-making."; Adapted from FAO Fisheries and Aquaculture Department, *FishStatJ – Software for Fishery Statistical Time Series*, 2018; Pauly D. and Zeller D., editors. *Sea Around Us Concepts, Design and Data*, 2015; Meta data from: Watson, Reg A., and A. Tidd. "Mapping Nearly a Century and a Half of Global Marine Fishing: 1869–2015." *Marine Policy* 93 (July 2018): 171–77.

RAM Legacy: Stock biomass is trending upward in the Global North, while biomass across the Global South continues to decline

In several countries, reduction in fishing pressure is directly associated with fisheries management policy changes. Examples where fishing pressure has decreased after policy changes include: the Magnuson-Stevens Act in the United States (revised in 1996), Common Fisheries Policy in Atlantic Europe (updated in 2002), and total allowable catches for several species in Japan (introduced in 1996).



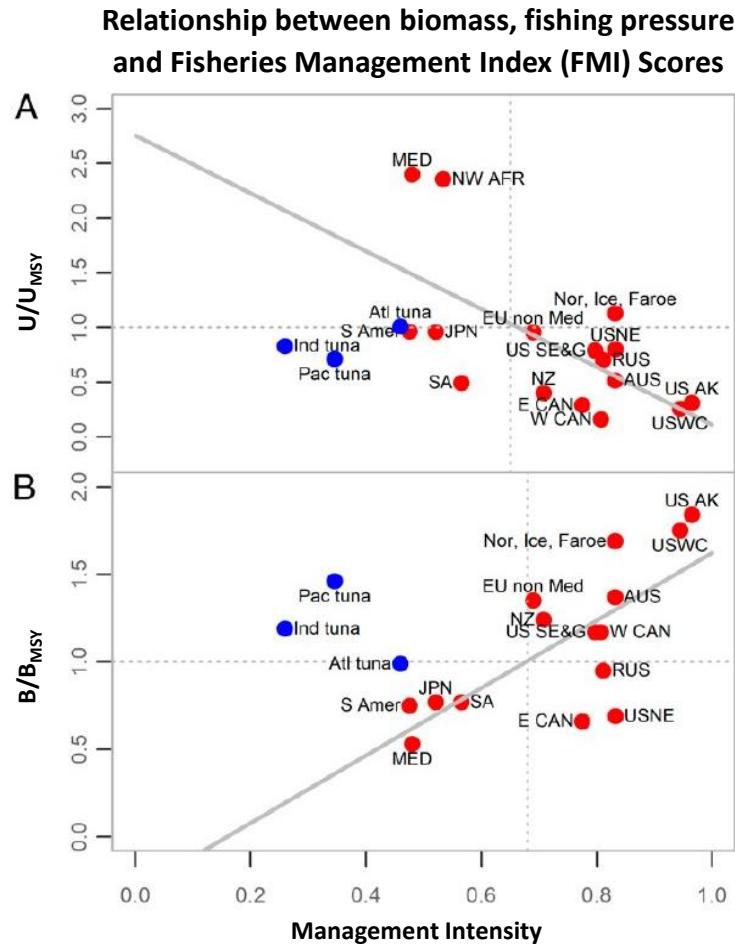
Source: RAM Legacy Stock Assessment Database. 2018.

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Abundance is increasing for assessed stocks; harvest rates average three times higher in areas with less-developed fisheries management

Stock assessment data are available for roughly half of global marine fish catch. In that half, there has generally been an uptick in the biomass of fish stocks in recent years. In contrast, Hilborn et al. argue that regions without abundance assessments have less-developed fisheries management and have half the abundance of assessed stocks.

Relationship between regional geometric mean (rescaled to the median in years of high coverage) (A) U/U_{MSY} and (B) B/B_{MSY} and the joint management and enforcement scores for FMI surveys in corresponding regions. Blue points represent tuna fisheries from the Atlantic, Pacific, and Indian Oceans, and red points represent other regions. Solid gray line is a linear fit to the data plotted in red. Dotted gray lines mark where U/U_{MSY} or B/B_{MSY} = 1 and where the best fit line intersects with U/U_{MSY} or B/B_{MSY} = 1. Abbreviations for regions are as follows: Atl tuna, Atlantic Ocean tunas; Ind tuna, Indian Ocean tunas; Pac tuna, Pacific Ocean tunas; AUS, Australia; E CAN, Canada East; W CAN, Canada West; EU non Med, EU non - Mediterranean; JPN, Japan; MED, Mediterranean; NZ, New Zealand; Nor, Ice, Faroe, Norway, Iceland, and Faroe Islands; NW AFR, NW Africa; RUS, Russia; SA, South Africa; S Amer, South America; U.S. AK, U.S. Alaska; USNE, U.S. North East; US S&G, U.S. Southeast and Gulf; USWC, U.S. West Coast.

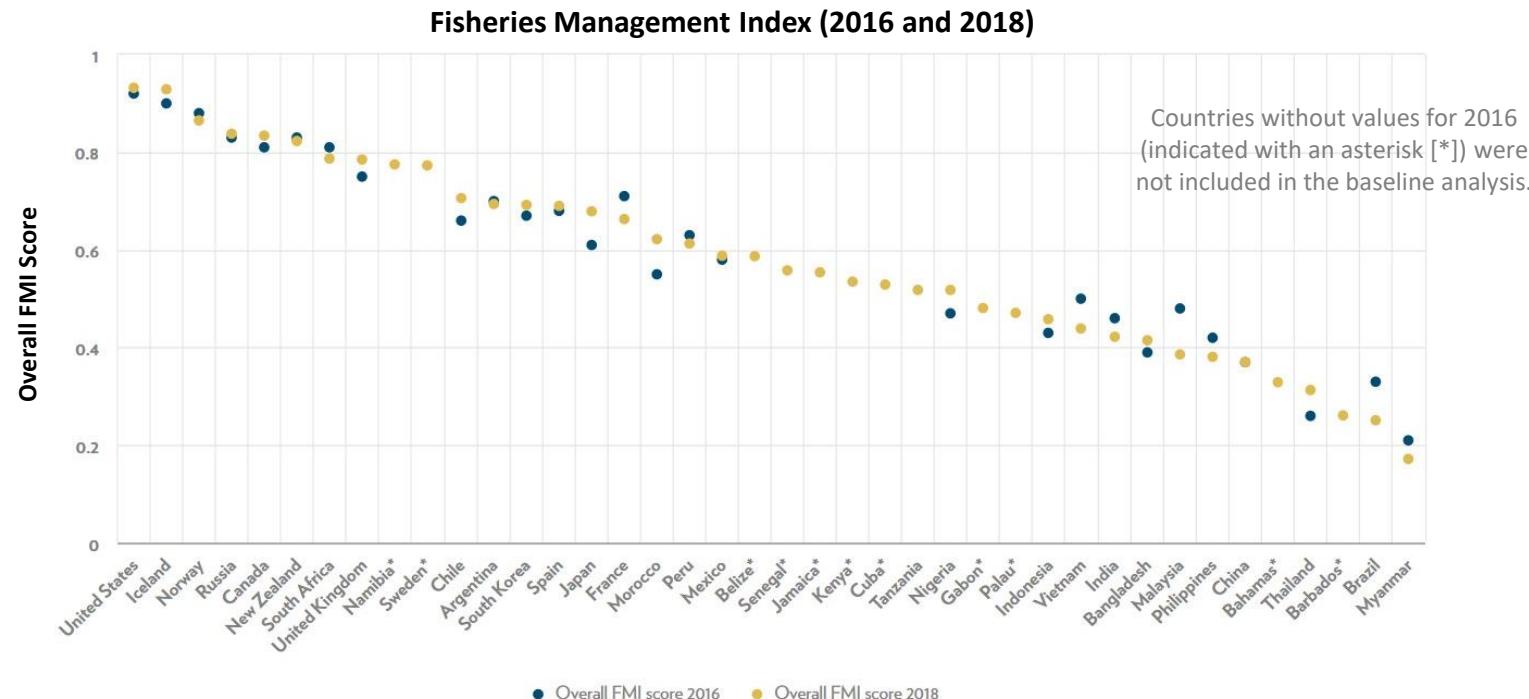


Note: B/B_{MSY} refers to biomass relative to the biomass that produces maximum sustainable yield (MSY). U/U_{MSY} refers to fishing mortality rate (U) scaled relative to the level that would achieve MSY.
Source: Hilborn et al., "Effective fisheries management instrumental in improving fish stock status." PNAS 117 (January 2020): 2218-2224.

Effective fisheries management is tightly associated with a country's capacity for good management via science, enforcement

The Fisheries Management Index, which relies on expert surveys to rate management effectiveness on a stock-by-stock basis, found substantial variation in management globally. The analysis found that three management attributes related to science-based limits are the largest determining factors of a country's stock health:

effectiveness of stock assessments, strength of fishing pressure limits, and comprehensiveness of enforcement programs. The FMI scores continue to hold a strong positive correlation with GDP per capita and a negative correlation with fishing capacity-enhancing subsidies.

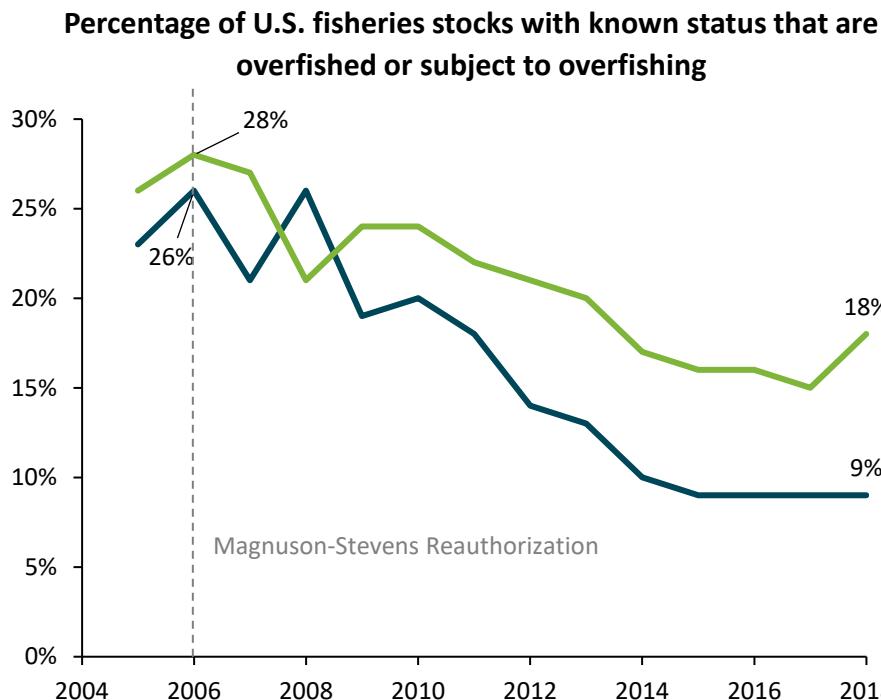


Sources: CEA Consulting. 2019. "Our Shared Seas: Global ocean data and trends for informed action and decision-making."; Source: Melnychuk, Michael C., E. Peterson, M. Elliott, and R. Hilborn. "Fisheries Management Impacts on Target Species Status." *Proceedings of the National Academy of Sciences* 114, no. 1 (January 3, 2017): 178–83. <https://doi.org/10.1073/pnas.1609915114>; Melnychuk, M., C. Ashbrook, M. Pons, R. Hilborn. "Assessing the effectiveness and recent changes in fisheries management systems of 28 fishing nations with the Fisheries Management Index survey." University of Washington. August 27, 2018.

The U.S. has made significant progress reducing overfishing in federally managed fisheries since the Magnuson-Stevens Act reauthorization in 2006

The number of U.S. fisheries experiencing overfishing has decreased by more than half since the 2006 reauthorization of the Magnuson-Stevens Act and subsequent amendments. Of the most important federally managed stocks, 9% are subject to overfishing,* down from 26% in 2006, though unchanged since 2015. Additionally, only 18% were overfished* in 2018, down from 28% in 2006, but up from 15% in 2017.

In 2018, eight stocks were newly added to the overfished list bringing the total to 43 stocks, up from a total of 35 stocks in 2017 and 38 stocks in both 2016 and 2015. Positive progress may be threatened, however, based on NOAA's final rewrite of the National Standard 1 (NS1) Guidelines in 2016.



- Overfishing, most important stocks†
- Overfished, most important stocks

†The “most important stocks” designation is based on the Fish Stock Sustainability Index (FSSI), a bucket of ~200 U.S. fish stocks selected for their importance to commercial and recreational fisheries. Note that the information in this graph is based only on assessed, federally managed fisheries.

*“Overfished” refers to the state of the stock (i.e., biomass), while “overfishing” refers to whether catch is occurring at a sustainable level (i.e., fishing pressure/mortality).

Sources: NOAA, 2018; NOAA, 2016; NOAA, 2015; NOAA, 2014; NOAA, 2013; and equivalent Stock Status Updates dating back to 2000; EDF, “H.R. 200 Threatens to Undo Decades of Progress,” 2017; Ocean Conservancy, 2017.

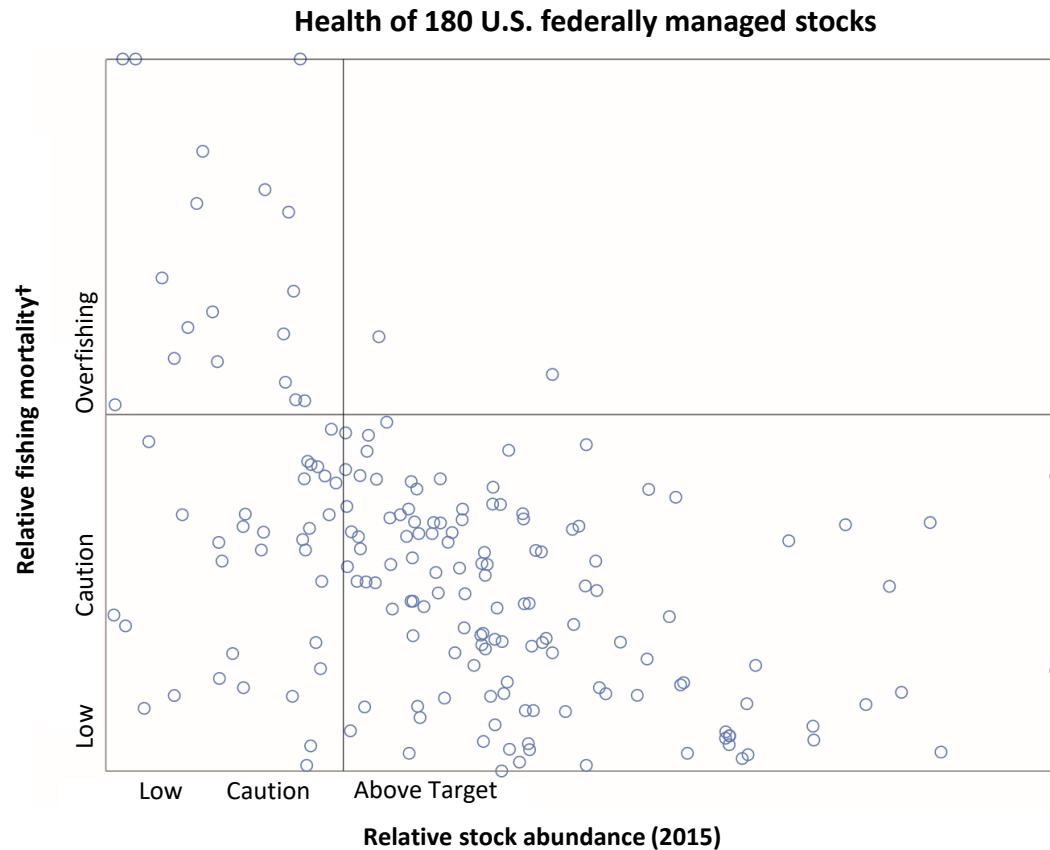
Most federally managed stocks in the U.S. are well managed and are in good health, though exceptions exist (e.g., bluefin tuna, Atlantic cod, red snapper)

Examples of stocks that are overfished and experience overfishing in the United States as of 2018 include:

- Blue king crab – Pribilof Islands
- Pacific bluefin tuna – Pacific*
- Striped marlin – Western and Central Pacific*
- Atlantic cod – Georges Bank, Gulf of Maine
- Witch flounder
- Yellowtail flounder – Cape Cod/Gulf of Maine, Georges Bank, S. New England/Mid-Atlantic
- Winter flounder – Southern New England/Mid-Atlantic
- Blacknose shark – Atlantic
- Blue marlin – Atlantic*
- Dusky shark – Atlantic
- White marlin – Atlantic*
- Scalloped hammerhead - Atlantic
- Hogfish - Southeast Florida
- Red snapper

*Stock is fished by U.S. and international fleets.

†“Relative fishing mortality” is based on current fishing mortality rates and fishing mortality limits from NOAA stock assessment and management data.

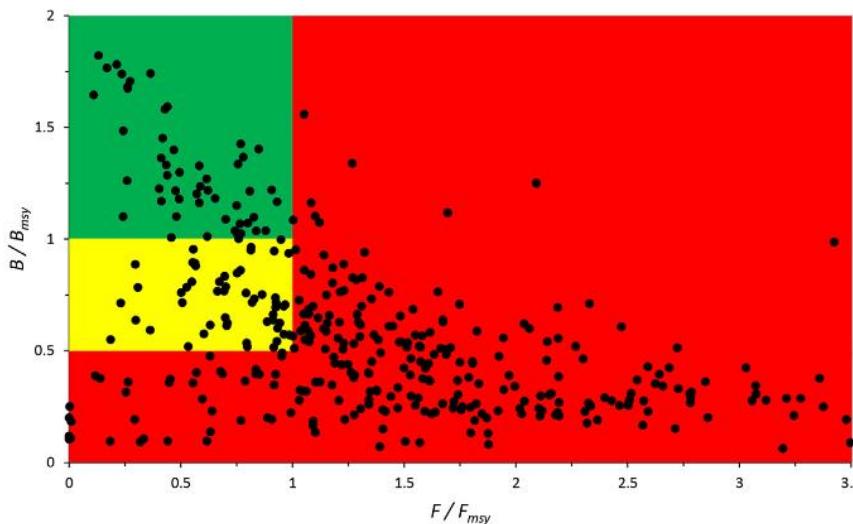


Sources: NOAA, “Prioritizing Fish Stock Assessments,” 2015; NOAA, “Status of the Stocks,” 2018. Kobe plot summarizing relative abundance and fishing mortality from the most recent assessment of 180 federally managed stocks with available information.

Overfishing is still widespread in European waters; 69% of stocks are suspected to be overfished

69% of 397 European stocks are suspected to be subject to ongoing overfishing and 51% of the stocks are outside safe biological limits. In the European Union, the Common Fisheries Policy (reformed in 2014), mandates the end of overfishing and the rebuilding of all stocks above levels that can produce maximum sustainable yields (MSY). However, only 12% of stocks were managed in line with the Common Fisheries Policy.¹

Presentation of 397 stocks in European Seas¹



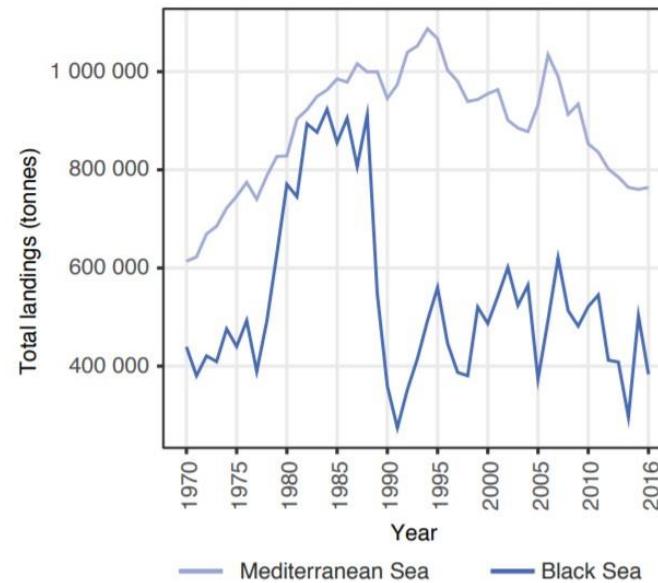
Presentation of 397 stocks in European Seas in a pressure (F/F_{msy}) – status (B/B_{msy}) plot, for the last years with available data (2013–2015). Red area: stocks that are being overfished or are outside of safe biological limits; yellow area: recovering stocks; green area: stocks subject to sustainable fishing pressure and of a healthy stock biomass that can produce high yields close to MSY. Note that several depleted stocks are not recovering despite zero commercial catches (lower left corner).

Sources:

1. Froese et al., "Status and Rebuilding of European Fisheries," Marine Policy, 2018. These statistics refer to the year of last publicly available data, 2013-2015.
2. FAO, "The State of Mediterranean and Black Sea Fisheries," 2018.; FAO, The State of World Fisheries and Aquaculture, 2018.

The Mediterranean and Black Seas remain poorly assessed and overfished. As of 2018, 78% of stocks in the Mediterranean and Black Seas were fished at biologically unsustainable levels, down from 88% in 2014. Around 18% and 10-15% of catches in the Mediterranean and Black Seas, respectively, are discarded every year. Production in the Mediterranean has started to stabilize over the last three years following a rapid decline in 2016. In the Black Sea, production has generally increased but varied year to year following the sharp collapse of pelagic fisheries in 1989.²

Total capture fisheries production trends by area²



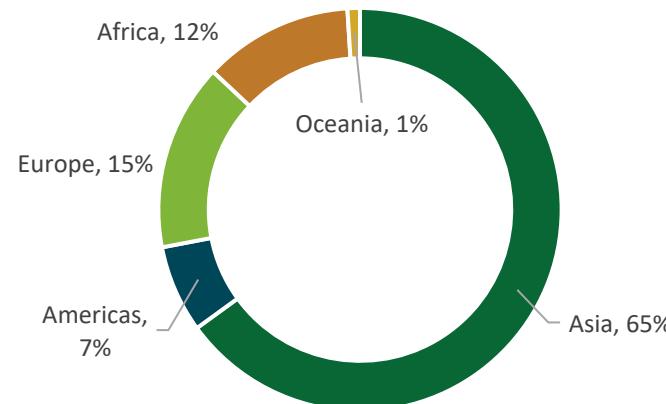
Suboptimal fisheries management results in countries losing as much as \$83 billion in foregone benefits each year

According to the second edition of the World Bank's "Sunken Billions" analysis, the suboptimal management of fisheries carries significant economic losses: as much as USD \$83 billion (in 2012 dollars) are lost annually in foregone economic benefits compared to what could be generated through more sustainable management of fisheries. The 2017 analysis found that the estimated sunken billions were reduced modestly by \$4 billion (from \$87 billion between 2004 and 2012). For context, available estimates suggest the global wild-capture fisheries industry was worth \$240 billion in 2017 (Commercial Fishing Industry – Global Market Outlook) and \$165 billion in 2014 (Sea Around Us), which tracks with an estimated current industry annual growth rate of 4.2-6.9% (Stratistics

MRC). Other estimates of the industry are lower; FAO estimates an industry value of \$130 billion in 2016.

These economic losses are heavily driven by the overcapitalization of the fishing industry; capacity-enhancing subsidies have been identified as a key driver in facilitating excessive fishing capacity. The most recent estimate of global fisheries subsidies (published in 2016) suggests that annual fisheries subsidies were about USD \$35 billion (in 2009 dollars). This estimate is in line with two prior estimates which used a similar methodology.

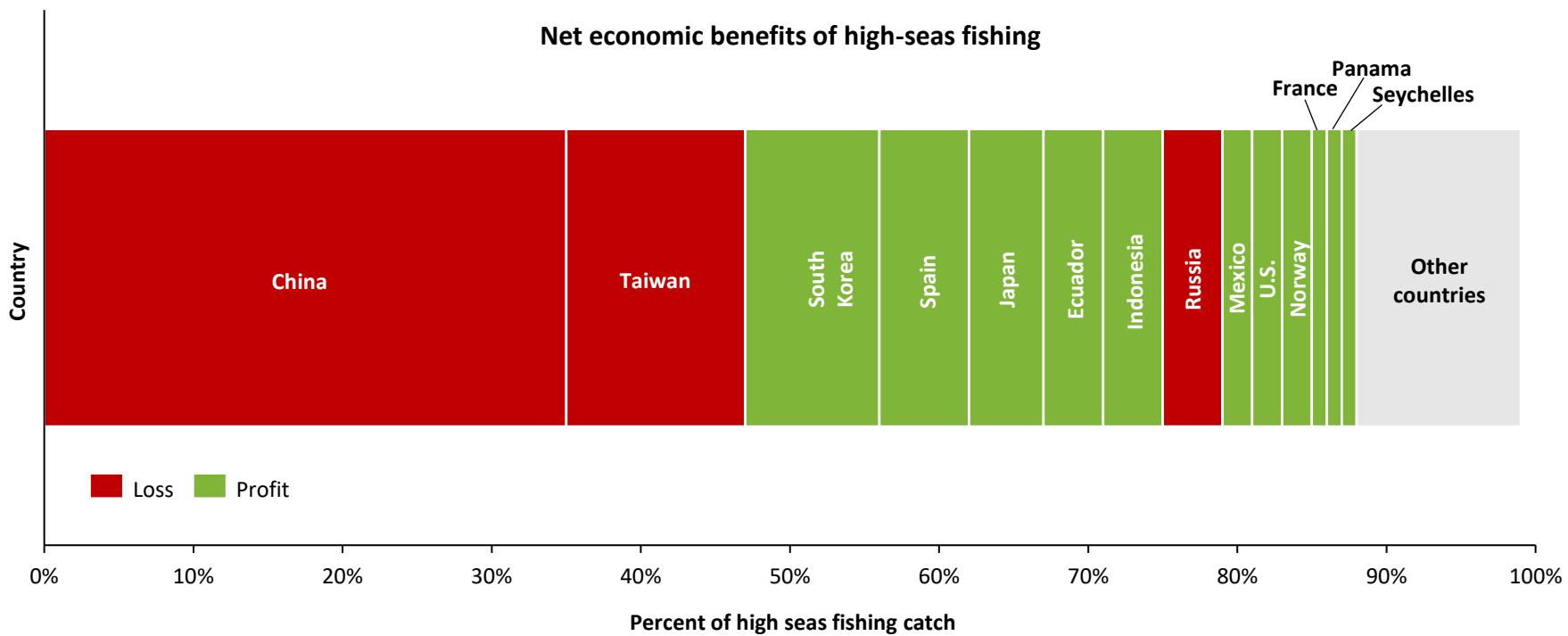
Distribution of sunken billions, by region



Sources: FAO, "The State of the World Fisheries and Aquaculture", 2018.; World Bank. "The Sunken Billions Revisited: Progress and Challenges in Global Marine Fisheries." Washington, DC: World Bank. Environment and Sustainable Development series, 2017.; Pauly D. and Zeller D., editors. Sea Around Us Concepts, Design and Data, 2015.; Sumaila, U. Rashid, Vicky Lam, Frédéric Le Manach, Wilf Swartz, and Daniel Pauly. "Global Fisheries Subsidies: An Updated Estimate." *Marine Policy* 69 (July 2016): 189–93.; Stratistics Market Research Consulting Pvt Ltd. "Commercial Fishing Industry – Global Market Outlook (2017-2026)," 2018.

Over half of high-seas fishing would not be economically viable without government subsidies; high-seas fishing can contribute to unfair and illegal compensation

For some countries that subsidize their high-seas fishing fleet—including China, Taiwan, and Russia—government subsidies far exceed fishing profits. This suggests that high-seas fishing, which accounts for 6% of global catch, would not be profitable at its current scale for these countries without subsidies. Landed volumes from distant-water fishing has been notoriously opaque and has limited a true estimation of fishing effort, impact, and cost. Unprofitable fisheries can be propped up by underreporting high-seas catch and by using unfair labor compensation (or no compensation), both of which contribute to IUU.

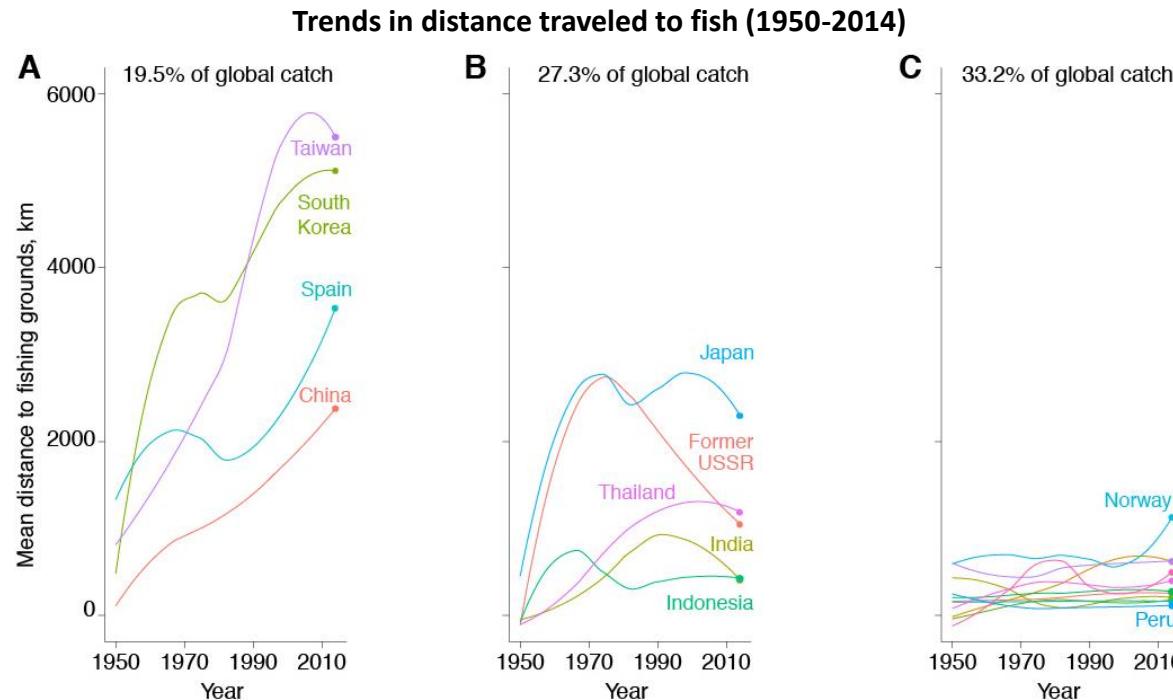


Source: Sala, Enric, J. Mayorga, C. Costello, D. Kroodsma, M.L.D. Palomares, D. Pauly, R. Sumaila, and Dirk Zeller. "The Economics of Fishing the High Seas." *Science Advances* 4, no. 6 (June 2018): eaat2504.

China, Taiwan, South Korea and Spain dominate distant water fishing globally

The practice of distant water fishing (DWF), defined as fishing in areas far removed from a country's domestic waters, has been dominated by a small number of countries in recent decades – namely China, Taiwan, South Korea, and Spain – which account for >60% of distant water landings. These countries have continuously expanded the mean distance to fishing grounds by more than 2,000 km between 1950 to 2014. Among

the top 20 fishing countries of the world, catches from the high seas and exclusive economic zones (EEZs) of other countries increased by more than 600% from 1950 to 2014—a trend which illustrates the prevalence of distant water fishing among countries that supply most of the world's wild-caught seafood.



Mean distance to fishing grounds for the world's 20 largest industrial fishing countries (by tonnage) grouped by expansion history: A) rapid and continuous expansion; B) expansion followed by retrenchment; and C) limited expansion. Percentage of global catch over the past decade is shown at the top of each panel.

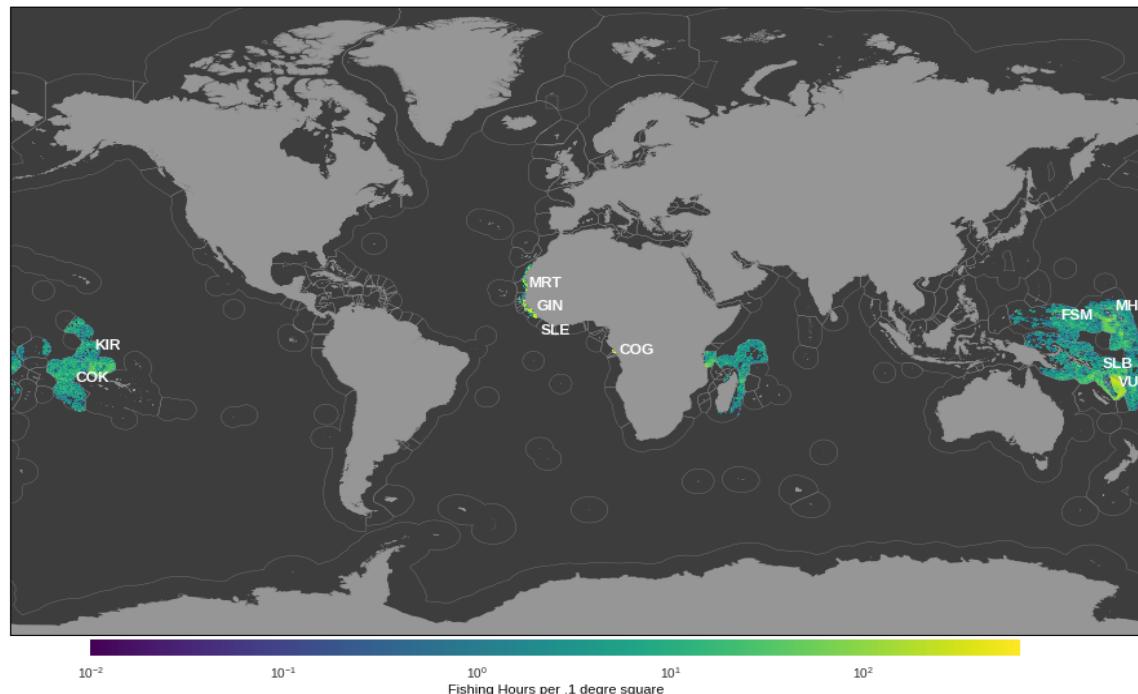
Source: Tickler, David, Jessica J. Meeuwis, Maria-Lourdes Palomares, Daniel Pauly, and Dirk Zeller. "Far from Home: Distance Patterns of Global Fishing Fleets." *Science Advances* 4, no. 8 (August 2018): eaar3279.

China's distant water fleet shows no promise of decline; instead, recent initiatives suggest global expansion

China fishes in the EEZs of over 50 nations, and their agreements with host nations remain opaque. A 2013 study by Pauly et al. argued that China's actual catch was nearly 10 times greater than reported to the FAO. The Stimson Center and Global Fishing Watch is creating profiles of major distant water fishing nations to provide information on their level of effort and the countries where that effort is expended. Preliminary results for China show intense effort in the Central Pacific and West and East Africa. These estimates should be compared to other efforts to quantify Chinese catch (e.g., Sea Around Us Project).

Top 20 EEZs fished by China's distant water fleet, by fishing hours (2016-2017)*

*Represents >95% of China's DWF total fishing hours, excluding neighboring EEZs



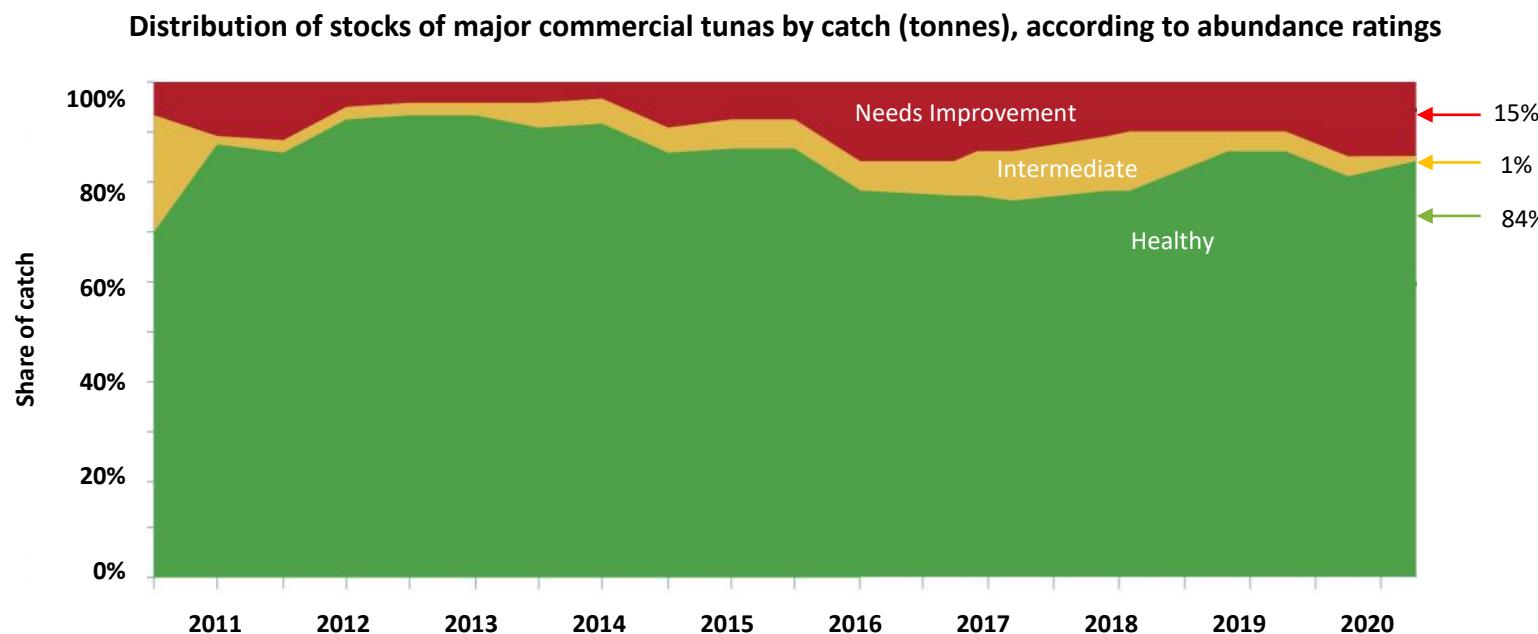
Sources: Global Fishing Watch/Stimson Center. The 13th Five-Year Plan for the Social and Economic Development of China: 2016-2020; "China pledges to shrink its fishing fleet by 20,000 vessels." Undercurrent News. 2017.; Pauly et al., "China's distant-water fisheries in the 21st century," 2013.

	Country	# of vessels	Total CN DWF fishing hours
1	Vanuatu (VUT)	104	401,900
2	Kiribati (KIR)	92	231,658
3	Solomon Islands (SLB)	74	180,042
4	Marshall Islands (MHL)	34	172,153
5	Cook Islands (COK)	35	108,101
6	Micronesia, Federated States of (FSM)	42	86,463
7	Guinea (GIN)	37	78,331
8	Mauritania (MRT)	32	68,830
9	Sierra Leone (SLE)	18	60,448
10	Congo (COG)	10	54,277

International Seafood Sustainability Foundation data shows 84% of global tuna catch and 65% of stocks are considered healthy

The International Seafood Sustainability Foundation's (ISSF) annual **Status of the World Fisheries for Tuna report provides a scientific assessment and rankings for 23 major tuna species globally**. According to the 2020 report, 65% of the stocks are at a healthy level of abundance, 17.5% are overfished, and 17.5% are at an intermediate level. In terms of exploitation, 70% of the stocks are not experiencing overfishing, while

30% are experiencing overfishing. In terms of catch, 84% of the total catch comes from healthy stocks in terms of abundance. This is because skipjack stocks contribute more than half of the global tuna volume, and all skipjack stocks are considered healthy. In contrast, one bluefin stock, one bigeye stock, and two yellowfin stocks are overfished, resulting in 15% of the total catch coming from overfished stocks.



Source: ISSF, "Status of the World Fisheries for Tuna 2020"; Data adapted from <https://iss-foundation.org/>.

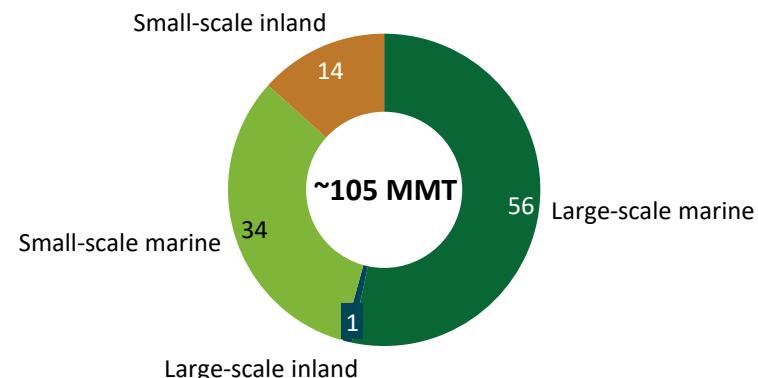
Small-scale fisheries contribute to half of global seafood landings; current market-based sustainability initiatives will need to evolve significantly if they are to engage with small-scale fisheries

The FAO suggests that small-scale fisheries may make up almost half of global capture fishery landings.¹ Small-scale fisheries are multifaceted, dynamic, and complex. Many small-scale fisheries operate in regions where infrastructure is limited and government capacity and regulations are weak. A strength of these fisheries “lies in their ability to persist in many of these contexts and continue to generate and distribute food and income where formal markets and global supply chains function poorly” (e.g., with relatively isolated and rural populations).²

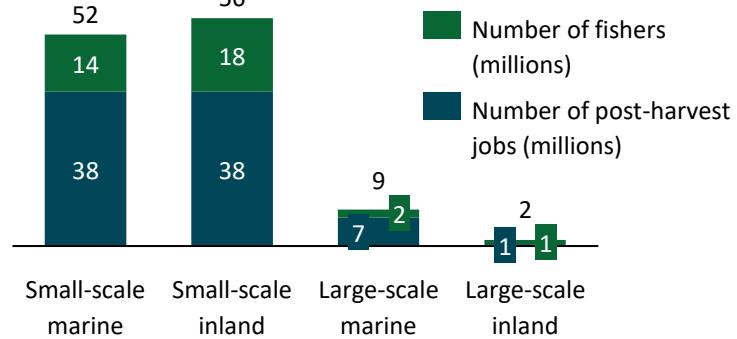
Small-scale fisheries facts

- Small-scale and larger-scale fisheries contribute approximately the same amount for human consumption.¹
- About 97% of the world’s fishers live in less developed countries, of which 90% are engaged in the small-scale sector.²
- In less developed countries, 47 million women and men are engaged in small-scale fishing and fish-trading.²
- In 2014, of 4.6 million fishing vessels globally, 2.5 million were considered small-scale vessels.³

Annual marine catch in 2012 (millions of tonnes)^{3,4}



Employment (full-time and part-time) in large-scale and small-scale fisheries⁴



Sources:

1. FAO, “The State of World Fisheries and Aquaculture: Meeting the Sustainable Development Goals”, 2018.

2. Cohen et al., “Securing a Just Space for Small-Scale Fisheries in a Blue Economy,” Frontiers in Marine Science, 2019.

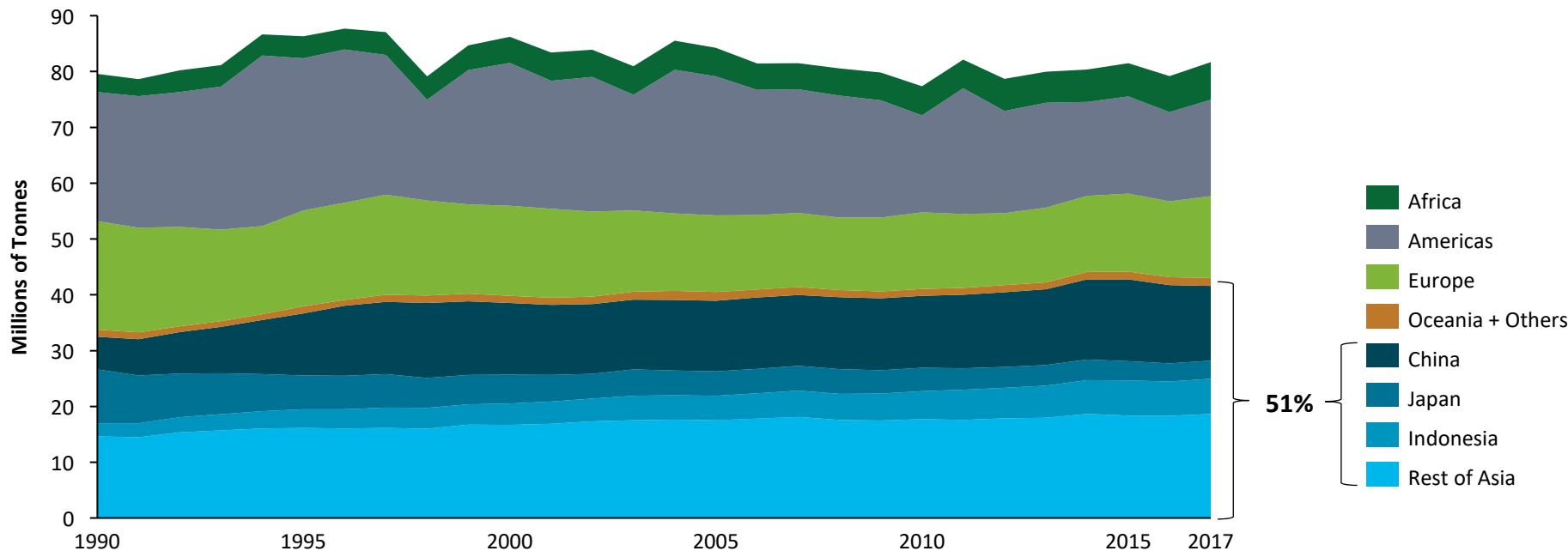
3. Strengthening Governance of Small-Scale Fisheries: An Initial Assessment of the Theory and Practice, Duke University, 2018.

4. FAO, “Improving our knowledge on small-scale fisheries: data needs and methodologies,” 2017.

Asia accounted for 51% of global wild-caught production in 2017; China alone accounted for 16%

Asia accounts for most of the wild-caught marine seafood globally, led by Chinese production. Though current catch levels in many parts of Asia may be unsustainable, per capita fish consumption in the region is expected to increase, and fishing industries will continue to grow.¹

Wild-caught seafood production by continent, 1990-2017²

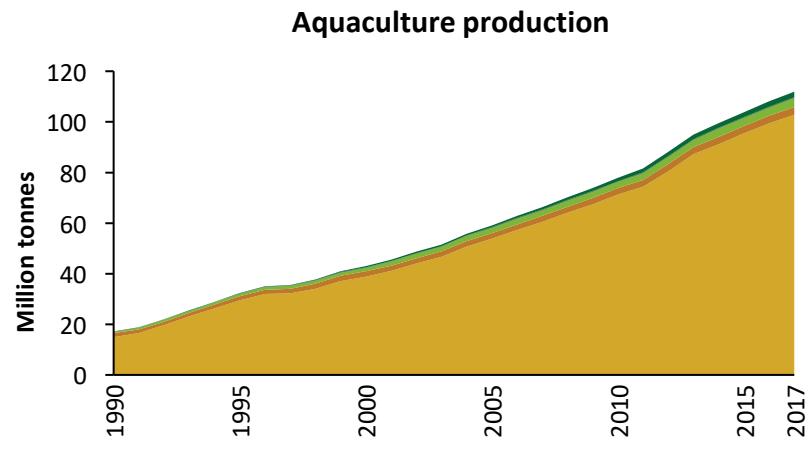


Sources:

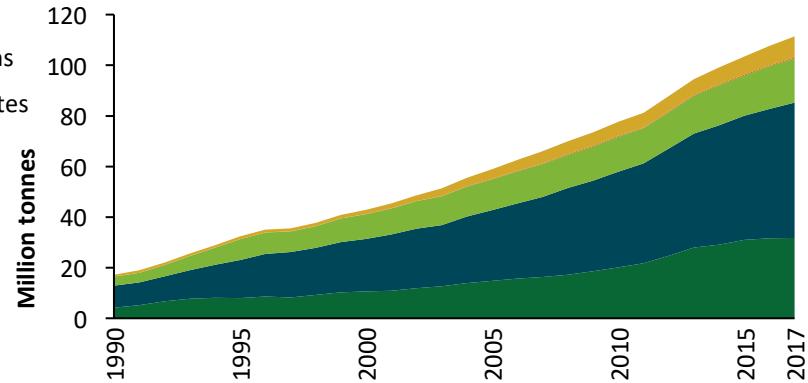
1. FAO, The State of the World Fisheries and Aquaculture, 2017
2. FishStatJ (Freshwater landings and seaweed harvest not included)

Total aquaculture production has continued to grow, outpacing total capture production and shifting the global seafood landscape

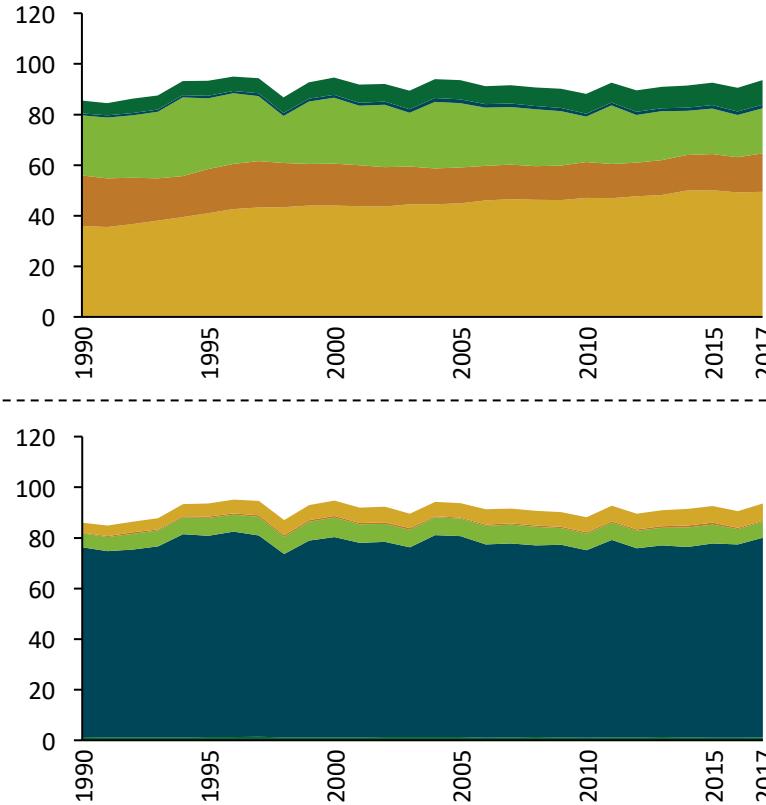
By Continent



By Species Group



Wild capture landings

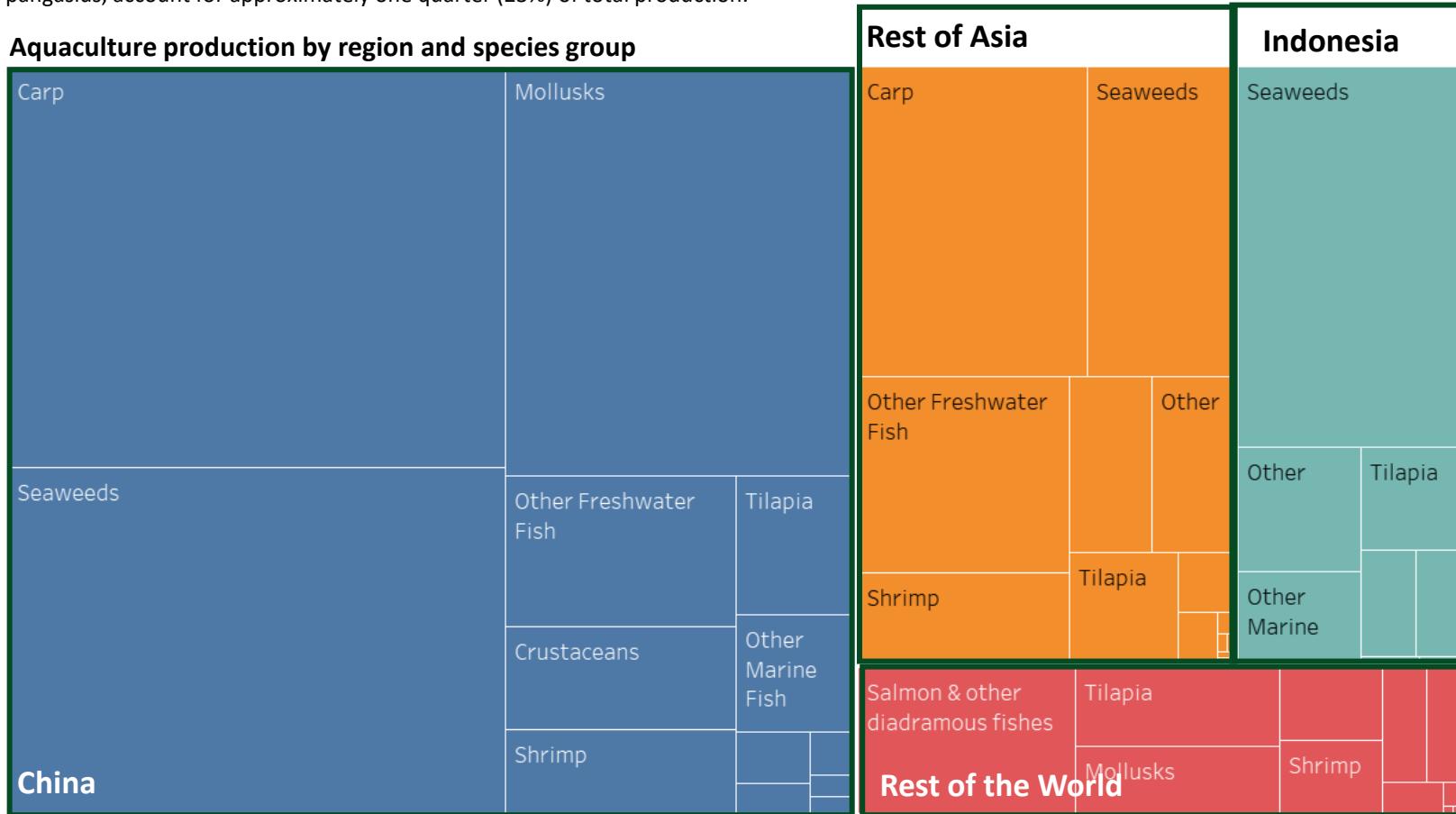


Sources: FAO, "The State of the World Fisheries and Aquaculture", 2016; FAO, FishStatJ
Includes marine and freshwater capture and production

Carp and other freshwater species, primarily grown in Asia, account for roughly one third of aquaculture produced globally

China produces 57% of global aquaculture, and the rest of Asia accounts for most of the non-Chinese production. Indonesia's production is rapidly expanding: most species groups have an annual growth rate greater than 20%. Species important to western buyers, including salmon, shrimp, tilapia, and pangasius, account for approximately one quarter (23%) of total production.

Aquaculture production by region and species group



Sources: 2017; FAO, FishStatJ

PRODUCER-LEVEL PROGRESS

Key takeaways

- Roughly 25% of global seafood production is MSC or ASC certified or green-rated by the Monterey Bay Aquarium. The remaining 75% of global production is unassessed, needs improvement, or actively improving. 71% of global green-rated seafood is farmed aquatic plants.
- In 2019, 15% of wild-caught seafood was MSC certified, up from 12% in 2016. The Global Sustainable Seafood Initiative now recognizes nine sustainable seafood certifications.
- 19 fisheries have moved from FIPs into MSC certification. In 2019, 136 active FIPs reported on FisheryProgress (up from 96 in 2017). FIP volumes (which are led by Peru, the U.S., and the E.U.) decreased to 9.4% of global catch, reflective of more accurate reporting of engaged volumes. For more information on FIPs, visit CEA's findings from the Global Landscape Review of FIPs at <https://oursharedseas.com/fipreview/>.
- The GAA and ASC continue to grow their certified farm volumes as a share of global production. The Certifications and Ratings Collaboration found that 35% of farmed production is certified or green-rated.
- At least 40 NGOs, industry collaborations, for-profits, and multilaterals work to address human well-being in seafood. 13 Fair Trade USA certificate holders engage over 10,000 fishers and workers. Roughly 20% of FIPs on FisheryProgress self-report on "social impact." However, it's too early to draw conclusions about impact or effectiveness.

METRICS INCLUDED:

Status of global production

Fishery improvement projects

Certification data

Human well-being and seafood

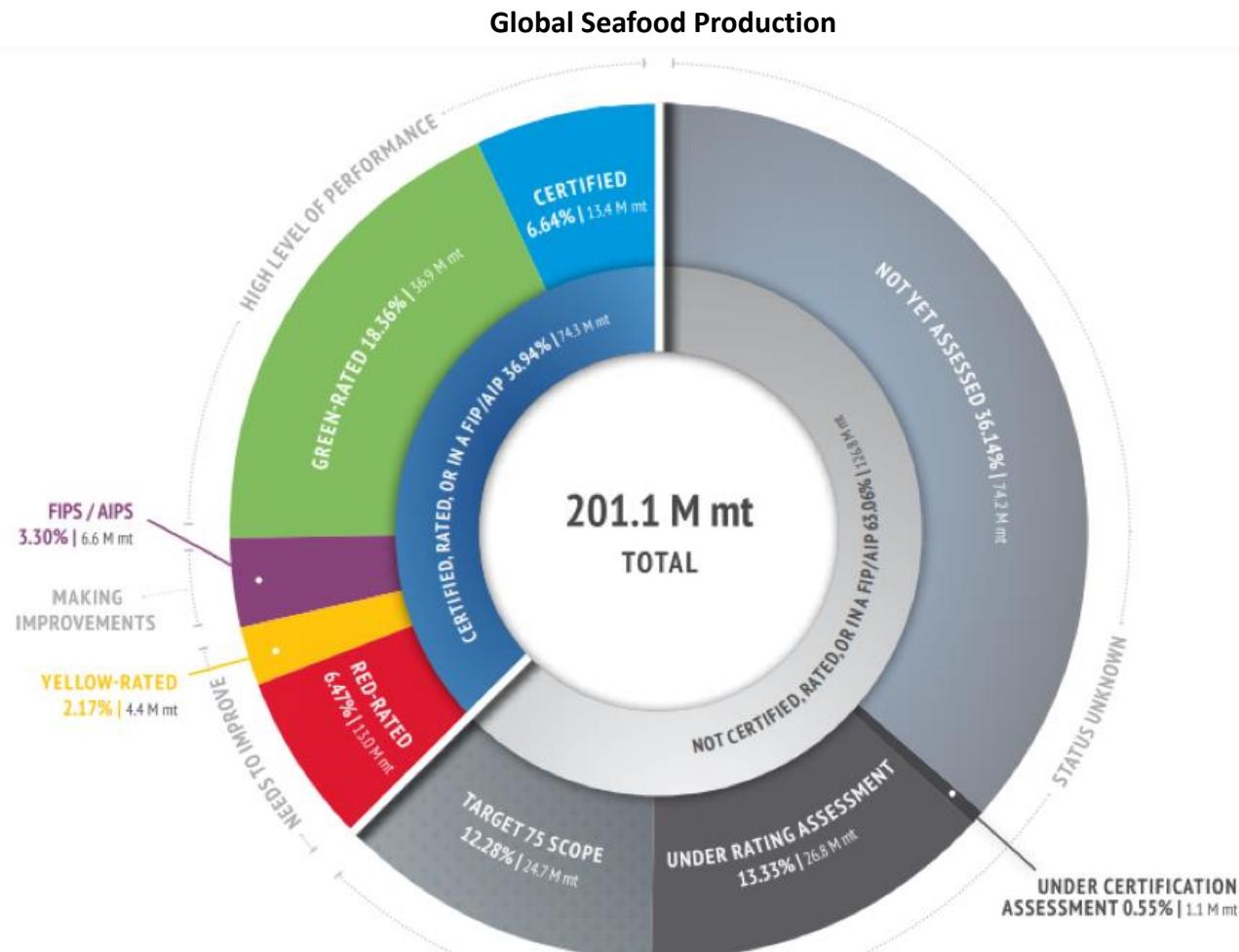
About 25% of global production is MSC or ASC certified or green-rated, leaving the remainder of production improving, in need of improvement, or unassessed

25% of global production is certified or green-rated by Certification and Ratings

Collaboration members, which include

Aquaculture Stewardship Council, Fair Trade USA, Marine Stewardship Council, Monterey Bay Aquarium Seafood Watch Program, and Sustainable Fisheries Partnership. The majority of green-rated seafood is farmed seaweed and bivalves.

The remaining roughly 75% of global production is unassessed, needs improvement, or actively improving. An additional 9% of global production is rated red or yellow by Monterey Bay Aquarium, indicating that improvements are still needed. While 3% of global production is currently engaged in a public fishery improvement project, 63% of global seafood production remains unassessed or not yet engaged in improvements by Collaboration members. The Collaboration is working to prioritize fisheries and aquaculture in the remaining 63% for assessment and improvement based on where there is high environmental or social risk and where there is market support for improvements.

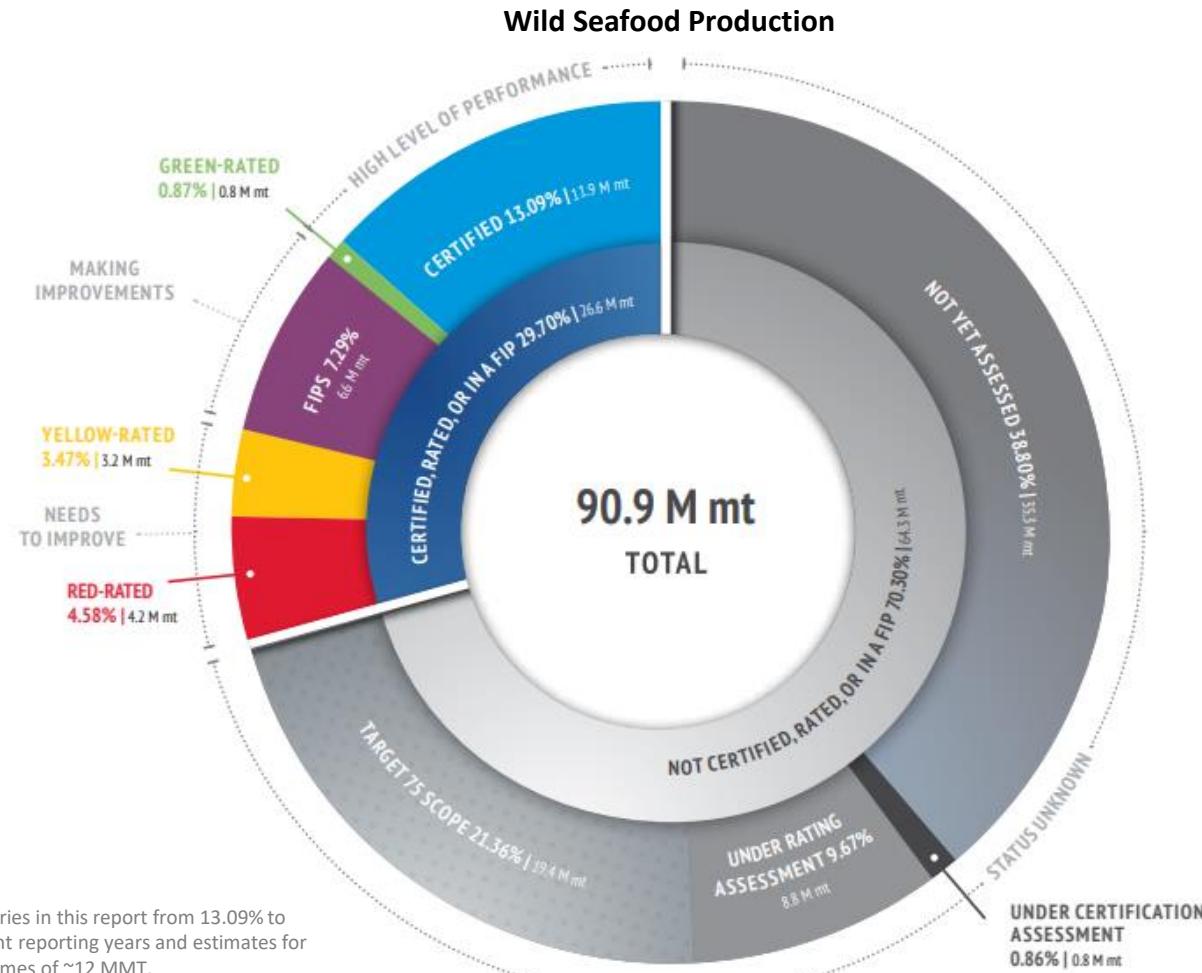


Source: Adapted from Certifications and Ratings Collaboration [Sustainable Seafood: A Global Benchmark, 2019](#)

Almost 30% of wild seafood production is certified, rated, or in a FIP; more than a third remains unassessed

22% of wild production is rated or certified by members of the Certification and Ratings Collaboration; with **14%** green-rated or certified. Tuna and whitefish represent most of the green-rated and certified wild seafood. Certified seafood ranges a variety of commodities, including whitefish (e.g., pollock, cod), tuna, demersal fish, and others.

86% of wild production is improving, needs improvements, or is status unknown. 3.5% of wild-capture seafood is yellow-rated as a good alternative (to red-rated seafood) but is still in need of some improvement. 4.6% of wild production is rated red, designating that improvements are needed before consumers should consider buying those species. Additionally, 7% of wild production is engaged in fishery improvement projects. 71% of wild seafood production is unassessed or not yet engaged by members of the Certification and Ratings Collaboration.



Note: Percentage of MSC certified wild-caught seafood varies in this report from 13.09% to 15% based on reporting source, which may reflect different reporting years and estimates for total global landings. All sources report MSC certified volumes of ~12 MMT.

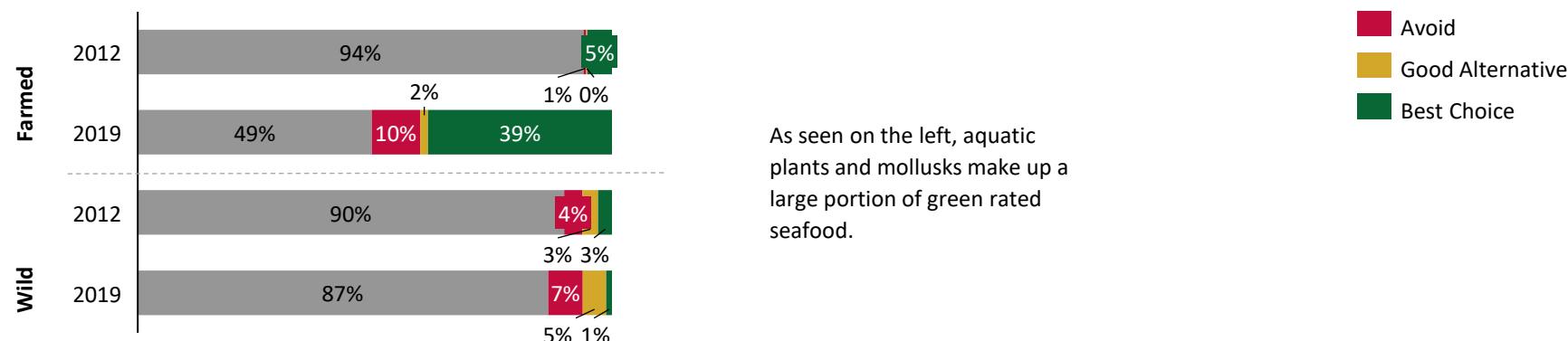
Source: Adapted from Certifications and Ratings Collaboration [Sustainable Seafood: A Global Benchmark](#), 2019

Seafood Watch has rated 34% of global wild-caught seafood, up from 8% in 2012

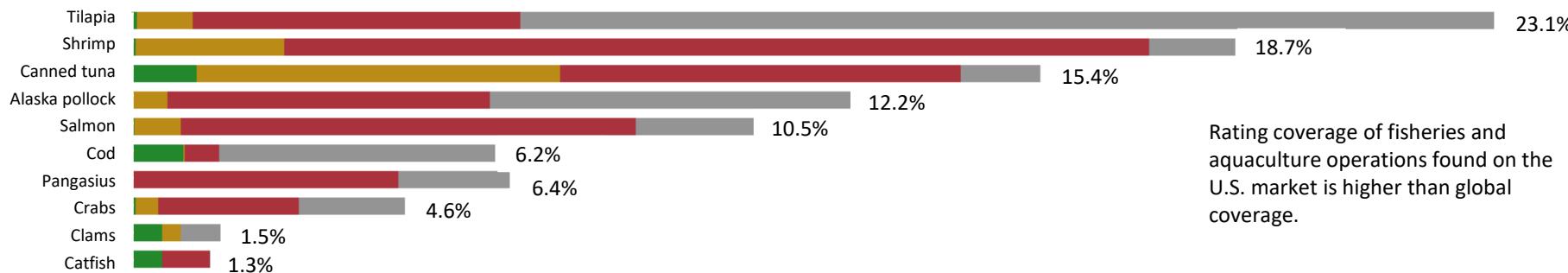
The Monterey Bay Aquarium's Seafood Watch ratings have now been applied to 34% of global wild-capture fisheries and aquaculture production. Early on, the Seafood Watch program prioritized assessing fisheries and aquaculture operations found on the U.S. market. In recent

years, Seafood Watch has shifted focus to assessing production outside of the U.S. market and capacity in 2020 will be split between maintaining existing assessments and assessing unrated production.

Ratings coverage of global wild and farmed seafood production, including aquatic plants



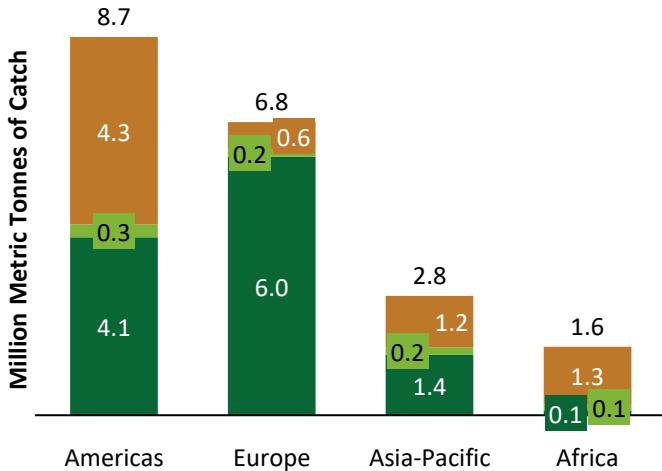
Seafood Watch ratings of top species found in the U.S. market



Source: Communication with Monterey Bay Aquarium Seafood Watch.

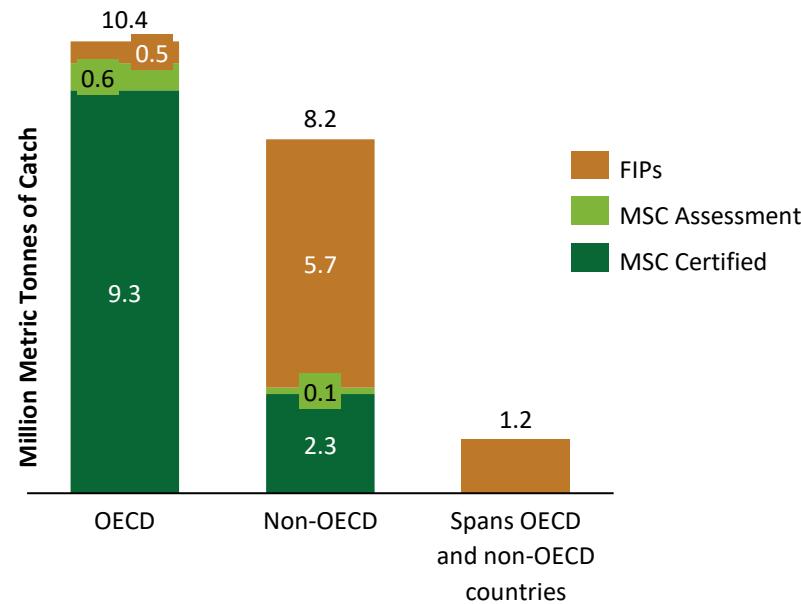
The majority of MSC certified volume is from OECD countries; half of non-OECD MSC certified catch comes from Russia

Nearly all MSC catch remains from more developed countries; 1.4 million metric tonnes of catch (11%) in MSC assessment or certification is not from an OECD country or from Russia (which is grouped with non-OECD). FIPs in more developed countries tend to focus on low-volume, high-value commodities such as mollusks. For non-OECD countries,



Engaged catch by continent (million tonnes of catch)

Peruvian anchoveta accounts for 60% of all FIP landings; the other 40% comes from FIPs across commodity groups and continents. Several regional tuna FIPs span OECD and non-OECD countries, making up roughly 16% of FIP catch globally, or one-third of the non-anchoveta FIP volume.



Engaged catch by OECD Status (million tonnes of catch)

Source: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020.

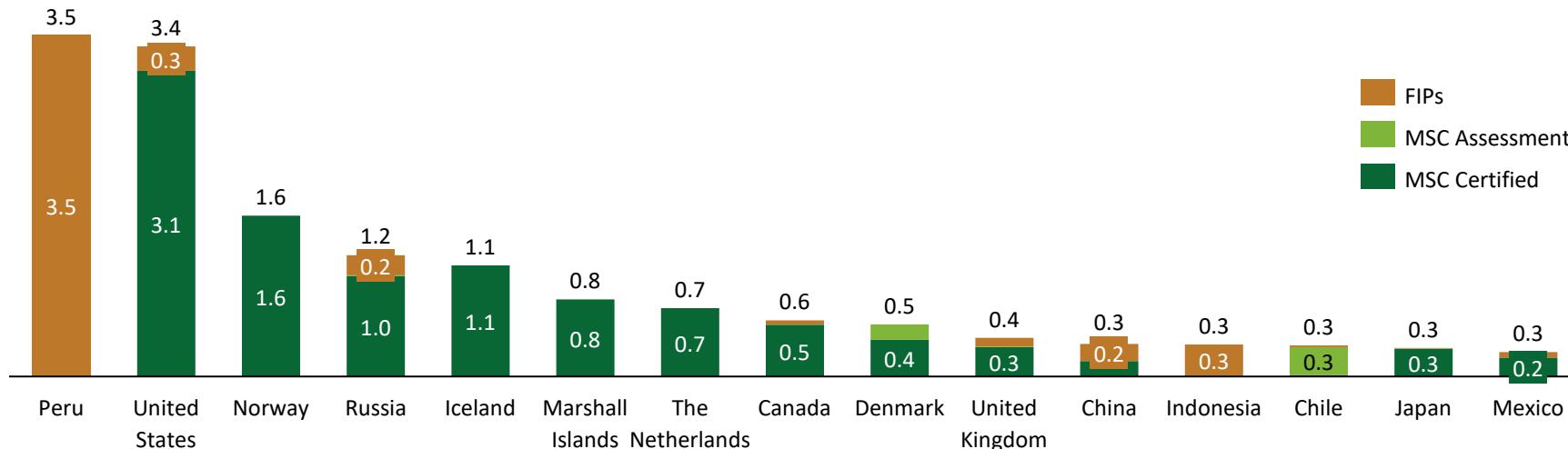
Landings exclude landings associated with Stage 0, Stage 1, and Stage 6 (MSC-certified) FIPs. ISSF associated landings are excluded for all years. In instances where there was overlap between reported FIP landings and MSC-certified landings (in the case of Stage 6 FIPs) landed tonnage was counted towards MSC landings.

Global landings vary annually, so both the numerator and denominator are dynamic when calculating the percentage of global landings engaged in each year.

MSC volumes are concentrated among a handful of countries that produce certified whitefish and tuna; Peruvian anchoveta is the largest engaged fishery

Peruvian anchoveta is the largest engaged fishery in the world, landing more volume than any other country's engaged catch (e.g., MSC certified, in MSC full assessment, or participating in a FIP) combined. Beyond Peru, the United States has the largest MSC certified volume,

driven by whitefish and salmon, followed by northern European countries. Focal countries for FIPs, including Indonesia, Chile, China, and Mexico, are increasing their FIP-engaged and certified volumes, although are still far behind countries with greater capacity for fisheries governance.

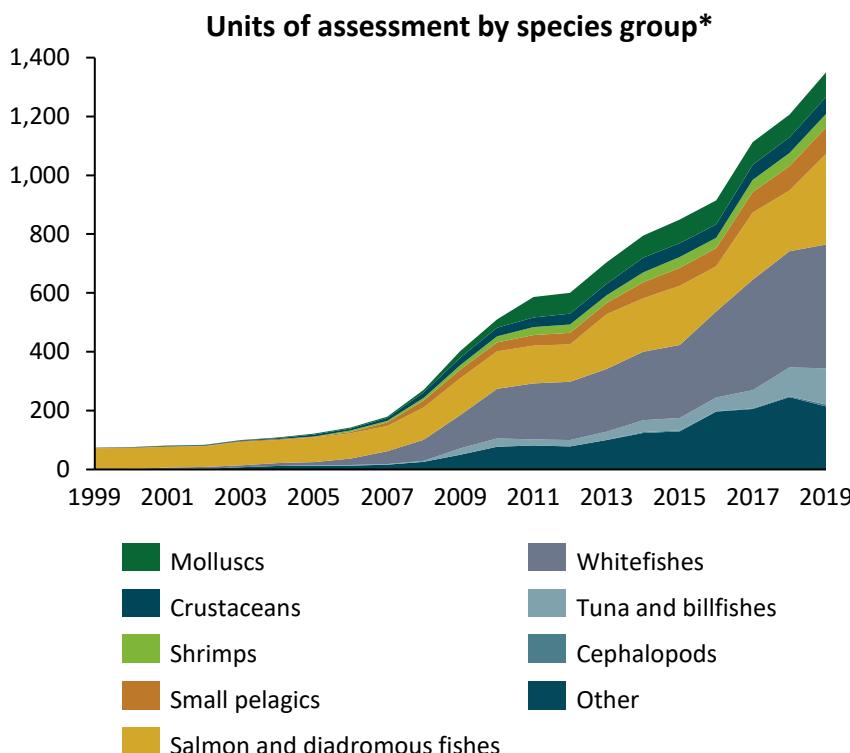


Engaged catch from countries of interest (million tonnes of catch)

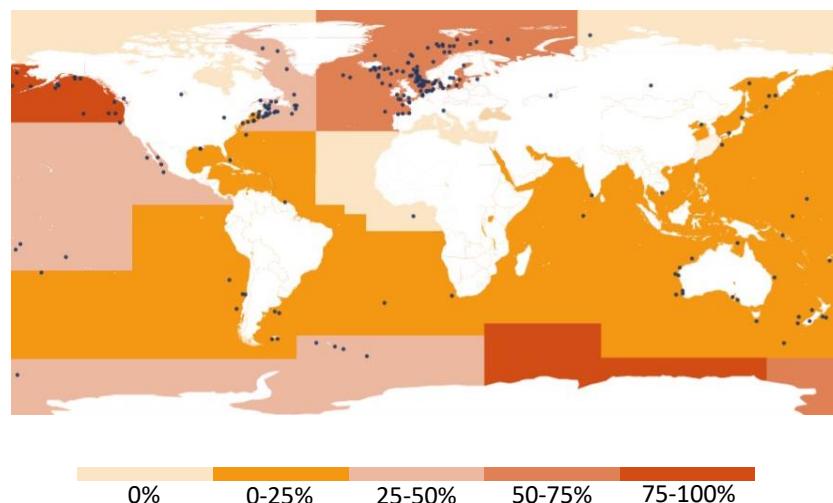
Source: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020.

MSC is increasingly engaging fisheries in less developed countries, though certified volumes remain relatively low in those geographies

MSC has certified 361 fisheries in 41 countries as sustainable, and 109 fisheries are currently in assessment. Since 2017, the number of fisheries in less developed countries engaged with the MSC program has more than doubled from 59 to 124.



Proportion of major fishing area catch that is MSC certified**



*The ‘unit of assessment’ is the full scope of what is being assessed. The target stock(s) combined with the fishing method or gear type(s), vessel type(s) and/or practices, and the fishing fleets or groups of vessels, or individual fishing operators pursuing that stock, including any other eligible fishers that are outside of the proposed Unit of Certification.

**MSC certified catch and fishery data as of 31 March 2019, compared with total catch for UN FAO Major Fishing Areas in 2016

Sources: MSC Annual Report, 2018-2019.; Communication with Peter Hair, Marine Stewardship Council.

CEA data show FIP and MSC volumes exceed more than a quarter of global wild capture landings, with the largest share in salmon, whitefish, and tuna

These volumes rose in absolute numbers and in relative global share in nearly every commodity since the 2015 FIP review, up to 26% from 23% of global catch, despite the withdrawal of several whitefish and salmon species from MSC certification. The spread of FIPs to more species and into lower income countries has helped to increase the volumes.

These values differ slightly from Certifications and Ratings (presented on the previous page) for a few reasons:

- From global landings, CEA excludes some International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) groups that are not measured in tonnes or are not relevant commodities to the seafood market community (e.g., whales, alligators).
- *CEA's MSC estimates include catch that is in the MSC Full Assessment process in addition to certified catch.
- FIP and MSC data are current as of March 2020

Total landings volume from FIPs and the MSC Program by species group

Commodity	FIP	MSC*	Combined Tonnage	% Global Landings
Crabs, lobsters, and crustaceans	201	254	455	18%
Mollusks	26	1,089	1,115	48%
Major tuna species	1,550	1,224	2,774	60%
Miscellaneous fish	127	931	1,058	3%
Salmon and diadromous fish	14	587	601	69%
Shrimp	378	365	743	21%
Small pelagics	4,235	1,704	5,939	30%
Snapper/grouper	4	-	4	0%
Squid/octopus	371	0.03	371	8%
Other tunas, bonitos, billfishes	258	4	262	9%
Whitefish	332	6,382	6,714	65%
Total	7,496	12,544	18,652	26%
Thousand tonnes of catch				

Note: Percentage of MSC certified wild-caught seafood varies in this report from 13.09% to 15% based on reporting source, which may reflect different reporting years and estimates for total global landings. All sources report MSC certified volumes of ~12 MMT.

Sources: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020.

In some fisheries, volumes reported to FisheryProgress or MSC are larger than the overall catch of the national fishery

Country	Commodity	Reported National Landings (mt)	FIP Volume (mt)	MSC Volume (mt)	Difference in Landings (mt)
Indonesia	Tuna	726,287	905,640	0	(179,353)
United Kingdom	Whitefish	216,286	138,105	111,871	(33,690)
United States	Shrimp	131,888	119,107	23,947	(11,166)
Costa Rica	Tuna-like fish	2,801	3,935	0	(1,134)
Ecuador	Crustaceans	371	408	0	(37)

Even as reporting has improved and landings inflation has fallen overall, there remain instances where combined FIP and MSC reported landings exceed the official catch statistics for the country. For example, in Indonesia, nine active tuna FIPs collectively report landings that exceed the official landings of the country. The problem does not appear to be limited to Global South countries with poor data quality; total U.S. shrimp landings are smaller than combined FIP and MSC reported landings as well. The same can be said for the United Kingdom's whitefish landings.

Further work is needed to continue to verify and validate FIP and MSC catch, perhaps through MSC pre-assessment audits or through watchdogs on FisheryProgress. This will help to more accurately track the progress of FIPs and other sustainability efforts against targets.

There are practical implications for over-reporting that limit supply chain leverage.

As one key informant explained, if an entire country's volume is reported as FIP-engaged, then all product from any supplier coming out of that country is understood to be a FIP-engaged product. Buyers have no way to reward FIP participants by preferentially sourcing from them, nor are there incentives for others to engage.

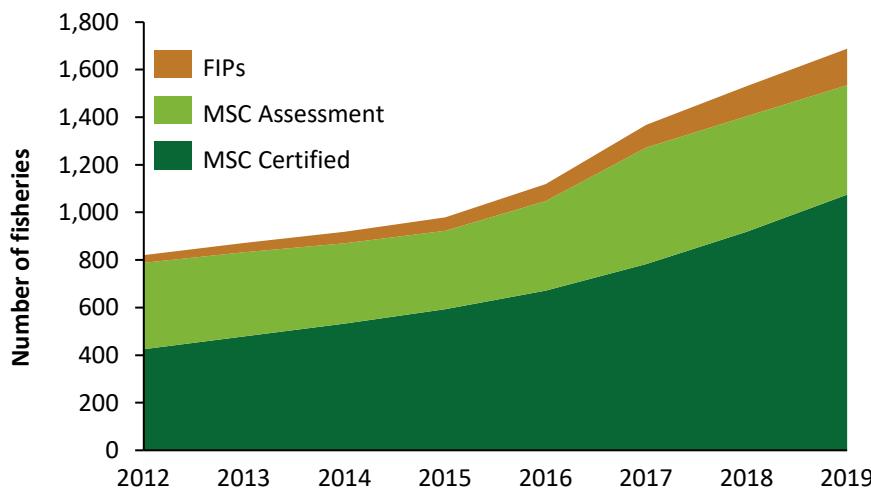
Fishery	Previously reported FIP volume (mt)	Current reported FIP volume (mt)	Total fishery volume (mt)
Peruvian anchovy (industrial)	6,000,000	3,060,000	3,322,099 (Peru total)

The inflated reporting of Peruvian anchoveta account for a considerable distortion in the historic FIP data and is the driving factor for why FIP engaged volume in 2019 is less than 2012.

Sources: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020.

The number of fisheries engaged with MSC and FIPs have grown steadily; more realistic reporting has decreased FIP volume in 2019

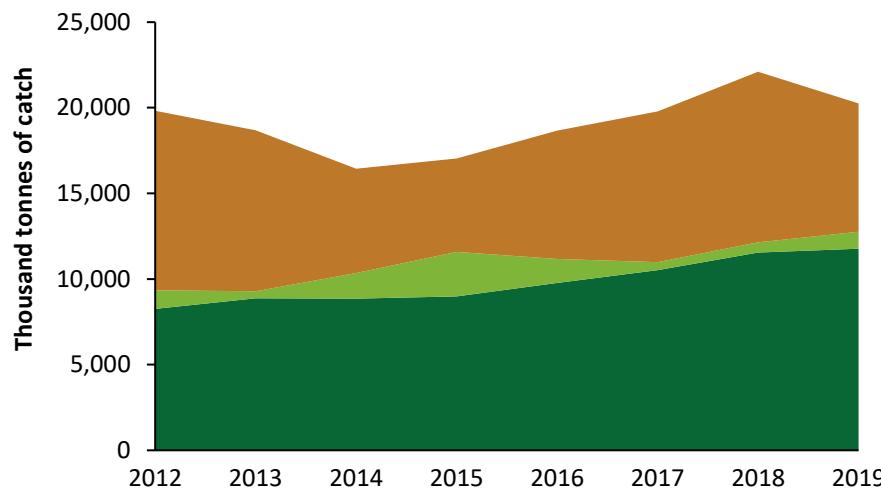
	FIPs			MSC Full Assessment			MSC Certified			Total		
	# of Fisheries	Landings ('000 tonnes)	% of Global Catch	# of Fisheries	Landings ('000 tonnes)	% of Global Catch	# of Fisheries	Landings ('000 tonnes)	% of Global Catch	# of Fisheries	Landings ('000 tonnes)	% of Global Catch
2012	32	10,490	13.8%	363	1,080	1.4%	425	8,256	10.8%	820	19,826	26.0%
2013	39	9,391	12.2%	353	405	0.5%	479	8,877	11.5%	871	18,673	24.2%
2014	49	6,090	7.9%	338	1,494	1.9%	532	8,861	11.4%	919	16,445	21.2%
2015	57	5,459	6.9%	329	2,593	3.3%	593	8,980	11.4%	979	17,032	21.6%
2016	71	7,493	9.8%	377	1,405	1.8%	671	9,768	12.8%	1119	18,666	24.4%
2017	96	8,782	11.1%	489	479	0.6%	783	10,510	13.2%	1368	19,771	24.9%
2018	127	9,955	12.5%	486	606	0.8%	918	11,543	14.5%	1531	22,104	27.9%
2019	153	7,496	9.4%	460	984	1.2%	1075	11,768	14.8%	1688	20,248	25.5%



Number of fisheries (units of assessment) engaged in FIPs and MSC

Note: Percentage of MSC certified wild-caught seafood varies in this report from 13.09% to 15% based on reporting source, which may reflect different reporting years and estimates for total global landings. All sources report MSC certified volumes of ~12 MMT.

Sources: CEA Consulting. FIP volumes provided through FisheryProgress in March 2020; MSC volumes provided from MSC in January 2020.



Total volume engaged in FIPs and MSC

Landings exclude landings associated with Prospective FIPs (i.e., Stage 0, Stage 1), and Completed FIPs (e.g., MSC-certified). ISSF associated landings are excluded for all years. In instances where there was overlap between reported FIP landings and MSC-certified landings (in the case of Stage 6 FIPs) landed tonnage was counted towards MSC landings. Global landings vary annually, so both the numerator and denominator are dynamic when calculating the percentage of global landings engaged in each year.

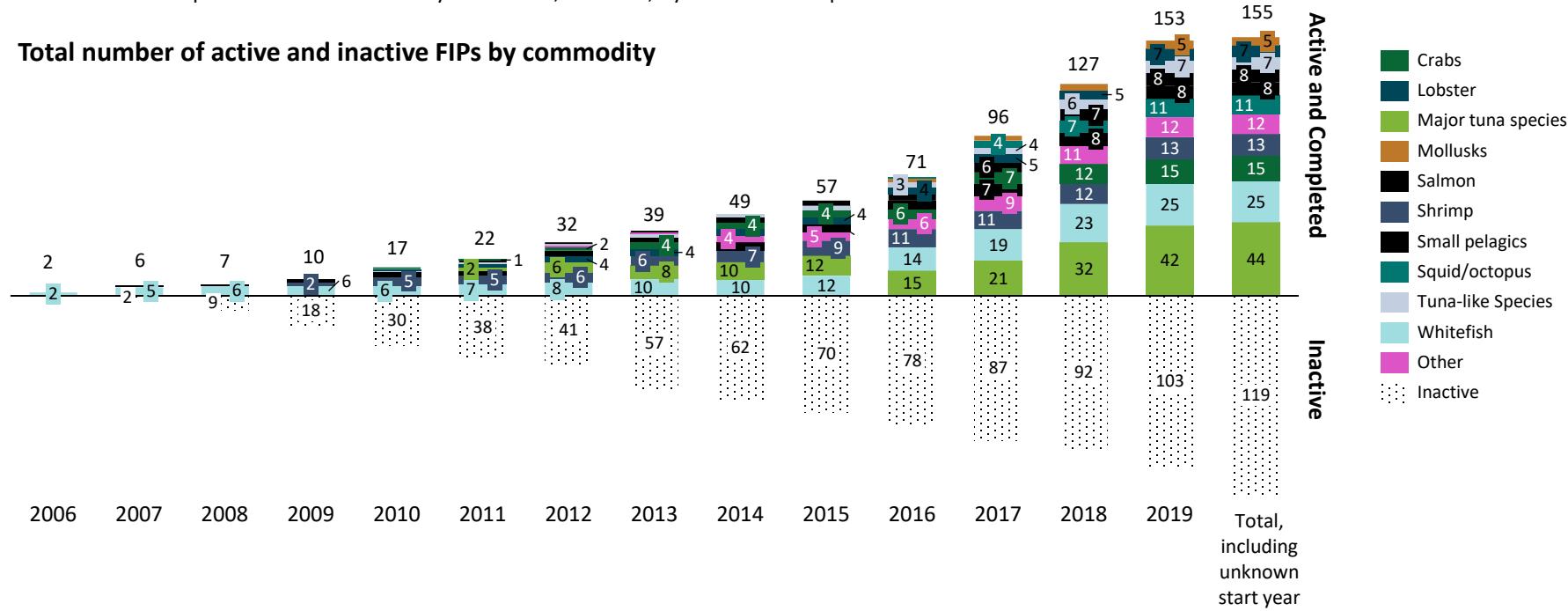
Tuna has overtaken whitefish as the commodity with the most FIPs, but the number of projects is artificially inflated

The number of FIPs is growing on every habited continent on earth, with an increasing number of new implementers joining the space annually.

While whitefish was the original flagship commodity for FIPs, the number of tuna FIPs has surpassed whitefish. This may be inflated, however, by

several small FIPs working on tuna in places like Indonesia and by FIPs engaged in global partnerships like the WWF/OPAGAC partnership that report as four different projects on FisheryProgress due to reporting requirements.

Total number of active and inactive FIPs by commodity



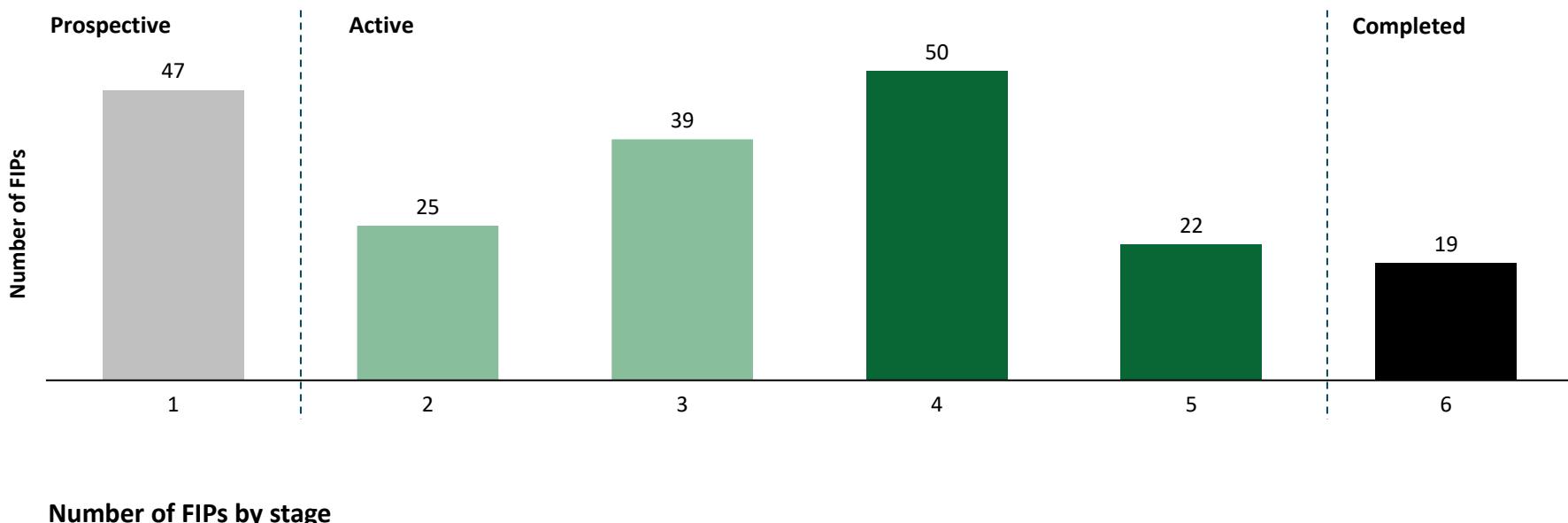
Note on reporting cumulative FIP counts: Due to timeseries data limitations, yearly FIP counts represented here show the cumulative number of projects by their initiation year and their current status (i.e., active or complete vs inactive). FIP count for a given year is not based on the number of FIPs active in that specific year. For example, the 2 FIPs identified in 2006 were both successfully completed (i.e., MSC certified). The 6 FIPs represented in 2007 include the 2 FIPs from the previous year plus 4 additional FIPs started in 2007 that have since remained active or were completed. FIPs that started but have since gone inactive are designated in the inactive count beginning in the start year because for most FIPs it is impossible to know in what year they transitioned from active to inactive. This means, for example, that if a FIP began in 2014 and went inactive in 2016, it is not represented as active in 2014 or 2015; it is counted among inactive FIPs starting in 2014. In this way, the number of active FIPs represented for each year underestimates the total number of FIPs that were active in that year, because multiple projects active that year have likely since gone inactive and are therefore counted in the inactive count in our data. Active and completed FIP counts are more accurate for recent years and reflect the actual number of active and completed FIPs in 2019.

Source: CEA internal FIP database. FIPs in Stage 2 – Stage 5, FIPs that have gone to certification, and FIPs that have become inactive or stalled. Excludes WWF Indonesia Projects

Most active FIPs report changes in management policy, fishing practices, or improvements on the water

FIPs are classified by “Stage.” Earlier Stage FIPs (i.e., Stage 2 and 3) have formulated a work plan and made progress towards achieving their objectives. More advanced projects report changes in fishing practices or management (i.e., Stage 4) or improvements on the water (Stage 5). Currently, more active FIPs are in Stages 4 or 5 than not, meaning that they have reported improvements in their fishery. A plurality of these are

in Stage 4, meaning that they have changed a policy or practice, but have not yet observed a change on the water. Compared to previous reports, we have seen a growth in Stage 5 FIPs, with more FIPs showing changes in biomass or other environmental outcomes. 19 FIPs have successfully completed their objectives, many of which have achieved MSC certification as a result.



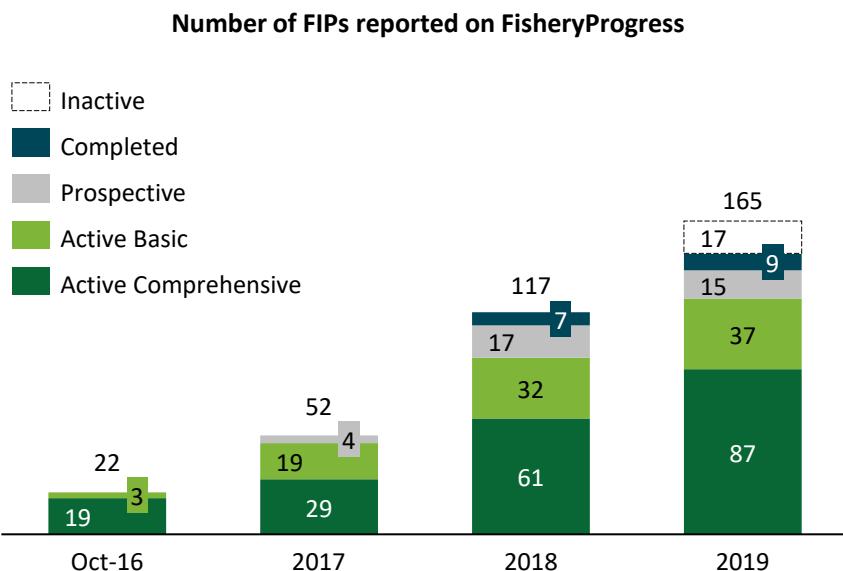
For a more complete explanation about FIP stages, please refer to the Conservation Alliance for Seafood Solutions [Guidelines for Supporting Fishery Improvement Projects](#)

Source: CEA internal FIP database

Over 120 active FIPs are now reporting on FisheryProgress, three years after its launch in 2016

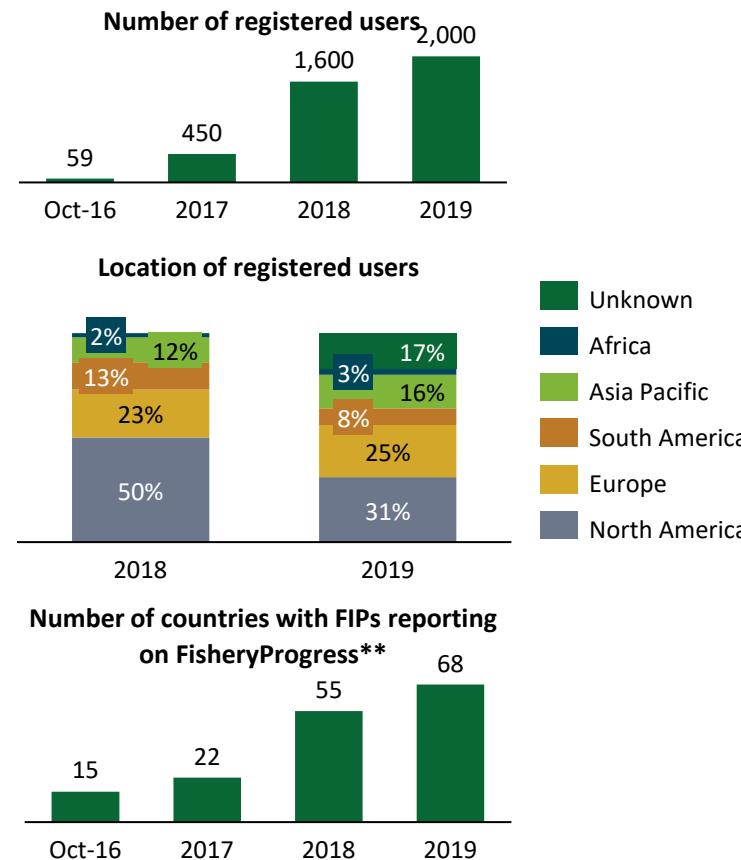
FisheryProgress launched in Fall 2016 to help inform companies, NGOs, and government officials of the status of FIPs. Companies can use FisheryProgress to help inform their sourcing decisions. Many company sustainability policies now require FIPs to be listed on the website.

Since the site launched, nine FIPs have been completed,* 33 FIPs have moved from prospective to active status, and 11 FIPs have moved from basic to comprehensive.



Notes: * FIPs do not have to enter MSC full assessment to be considered complete, although all 9 FIPs did.
 'Completed' refers to a FIP that meets its sustainability goals and can produce evidence that it met these goals.
 ** Number of countries includes countries with active, prospective, inactive, and completed FIPs on the site.
 Source: Communication with Kristin Sherwood, FishChoice in January 2020.

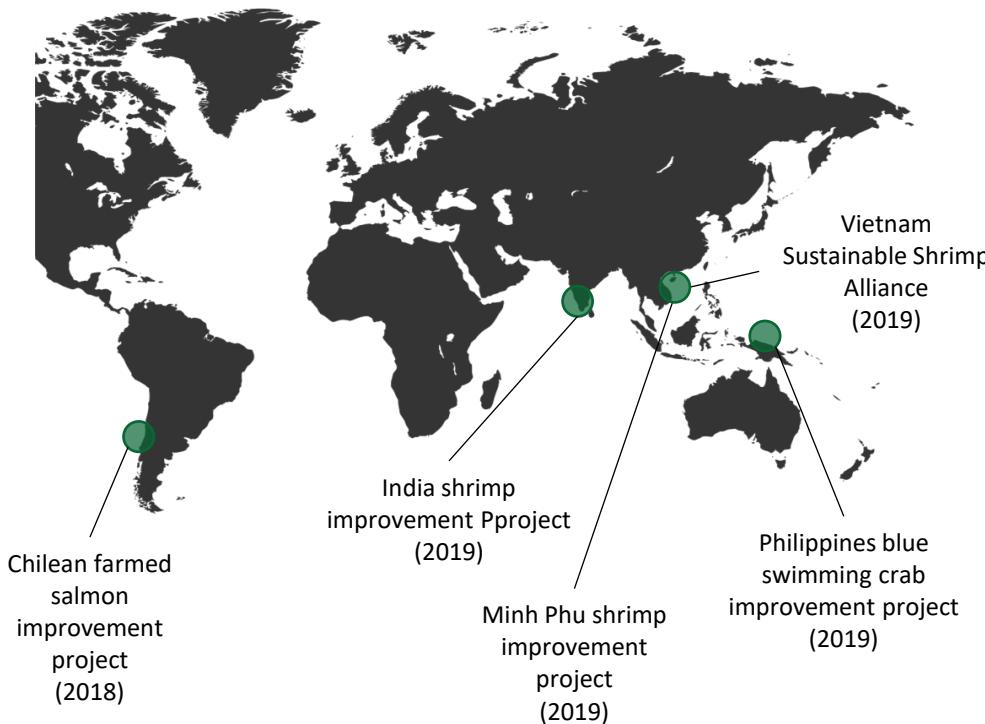
Since 2017, FisheryProgress has translated profiles into Spanish and Japanese. In 2019, the site released an Interim Policy on Forced Labor, Child Labor, or Human Trafficking, and in 2020, FisheryProgress will be continuing work with a Social Advisory Committee to develop a permanent social responsibility policy for the site.



Seafood Watch's improvement projects seek "Good Alternative" and "Best Choice" ratings for farmed shrimp, farmed salmon and blue swimming crab

Seafood Watch projects are structured using the Partnership Assurance Model, which brings together local and national governments, fishers and farmers in a specific production region, and committed end buyers to co-design, implement, and verify environmental improvements throughout the production process. The partners agree on priority sustainability objectives, develop a timeline towards meeting these objectives, adapt standards to the area and local context, and implement a verification system.

Five Seafood Watch improvement projects



Source: Communication with Monterey Bay Aquarium, Seafood Watch.

Spotlight: Vietnam Sustainable Shrimp Alliance	
Launch year	2019
Project scope	Ca Mau, Vietnam Whiteleg shrimp and giant tiger prawn
Volume	~160,000 mt annually (40% of Vietnam's annual farmed shrimp production)
Current country level baseline	~84% of Vietnam's production of whiteleg shrimp and giant tiger prawn is rated Seafood Watch "Avoid" and the remaining 16% is certified to Global Aquaculture Alliance: Best Aquaculture Practices, 2-, 3-, 4-star or ASC.
Committed funds	Private sector members committed \$270,000 (USD) to establish the public-private partnership, a secretariat, and a fund to support collaboration and improvement efforts.
Project description	The Vietnam Sustainable Shrimp Alliance aims to improve the environmental sustainability of the shrimp aquaculture sector and support livelihoods in Ca Mau Province. Alliance members include supply chain companies, government agencies, and NGO representatives. The project seeks to achieve a level of environmental performance equivalent to Seafood Watch "Good Alternative" by 2030.

Global Sustainable Seafood Initiative recognizes nine certifications and schemes; a joint social benchmarking tool is forthcoming

In 2016, the Global Sustainable Seafood Initiative (GSSI) began benchmarking sustainable seafood schemes with the goal of aligning seafood certification globally. Its Global Benchmark Tool evaluates certification schemes against a common set of requirements and indicators. As part of a planned 3-year review of the tool, V2.0 will be finalized in the spring of 2020 and will include new FAO guidelines.

In addition, in 2018, GSSI began collaborating with the Sustainable Supply Chain Initiative (SSCI) to create a social compliance benchmarking tool for the seafood sector. GSSI has 80 funding partners and 13 affiliated partners. In 2020, GSSI also launched its Seafood MAP initiative to engage non-certified fisheries to become more sustainable.



Sources: GSSI Annual Report 2017-2018; GSSI Website.

Current benchmarked certifications and schemes

1. Alaska Responsible Fisheries Management (RFM) Certification Program (July 2016)
2. Iceland Responsible Fisheries Management (IRFM) Certification Programme (November 2016)
3. Marine Stewardship Council (MSC) (March 2017)
4. Best Aquaculture Practices (BAP) Certification (May 2017)
5. GLOBALG.A.P. Aquaculture Certification System (April 2018)
6. Aquaculture Stewardship Council (ASC) (August 2018)
7. Audubon Gulf United for Lasting Fisheries (G.U.L.F.) Responsible Fisheries Management (RFM) Certification Program (October 2018)
8. BIM Certified Quality Aquaculture (CQA) Scheme (February 2019)
9. Marine Eco-Label Japan (MEL) V2 Scheme for Aquaculture and Fisheries (December 2019)

Year	2016	2017	2018	2019
Total schemes benchmarked	2	4	7	9



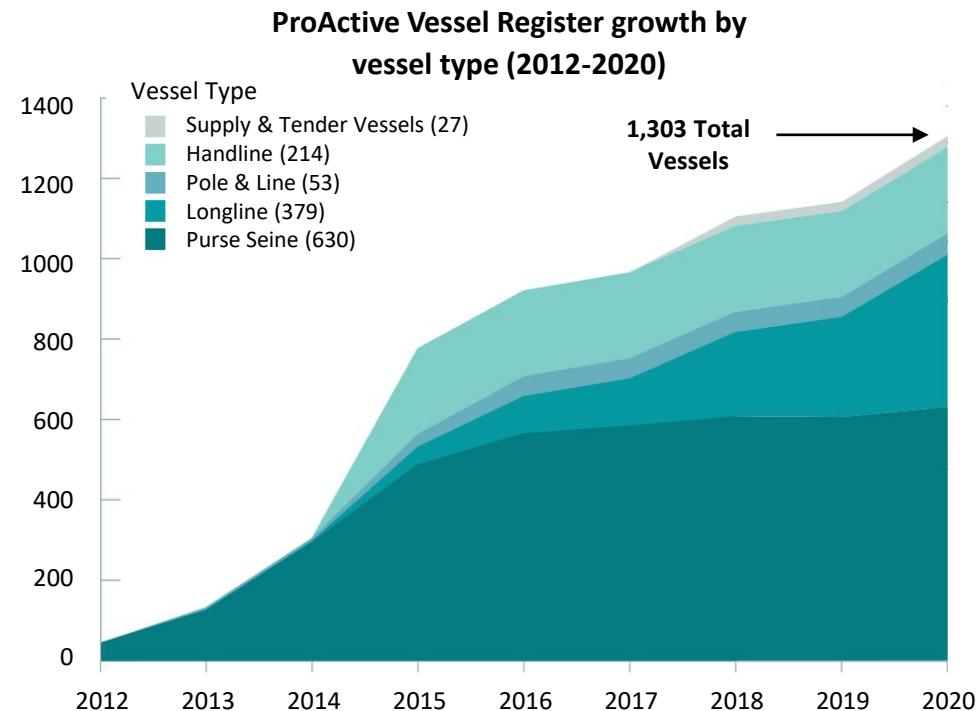
The International Seafood Sustainability Foundation's ProActive Vessel Register surpasses 900 vessels, improving tuna transparency

The International Seafood Sustainability Foundation (ISSF) launched in 2009 as a partnership amongst the tuna industry, scientists, and environmentalists. In 2016, ISSF's advocacy work supported 45 conservation measures or policies surrounding bycatch reduction, illegal fishing elimination, and capacity management at the Regional Fisheries Management Organization (RFMO) level.

Current advocacy priorities include:

- Implementation of rigorous harvest strategies, including harvest control rules (HCRs) and reference points
- Effective management of fleet capacity, including establishing mechanisms that support developing coastal state engagement in the fishery
- Science-based Fish Aggregating Device (FAD) management measures and requiring the use of non-entangling and biodegradable FAD designs
- Strengthened RFMO member compliance processes, including greater transparency of these processes to ensure full compliance with all adopted measures
- Strengthened monitoring, control, and surveillance measures, including tightening the regulation of at-sea transhipment; reforming vessel monitoring systems; increasing observer coverage on fishing vessels and carriers through wider use of modern technologies, such as electronic monitoring and reporting; and adopting port State measures
- Adoption of best-practice bycatch mitigation for sea turtles, sharks and rays, seabirds, and effective shark conservation and management measures

The ISSF ProActive Vessel Register (PVR) enables tuna vessel owners to identify themselves as incorporating sustainable tuna fishing practices, which allows tuna purchasers to consult the PVR as part of their sourcing decision-making. As of August 2017, more than 30 companies had incorporated ISSF conservation measures and/or PVR into sourcing.



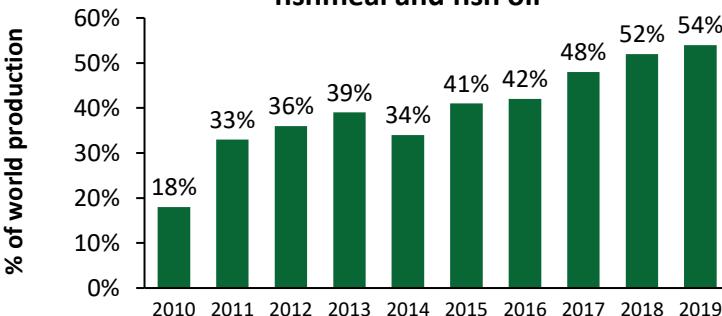
Sources: ISSF, "ISSF Annual Report," 2019.; ISSF, "Advancing Sustainable Tuna Fisheries: A Five-Year Plan," 2018.

Over half of global fishmeal and fish oil is now certified under the IFFO Global Standard for Responsible Supply, now called MarinTrust

Around 54% of global fishmeal and fish oil production, representing over 3.5 million tons, is now compliant with the MarinTrust Standard (previously IFFO Global Standard for Responsible Supply). 148 sites in 20 countries have been independently audited and certified against the MarinTrust Standard. 74 sites in 16 countries have been certified to the MarinTrust Chain of Custody (CoC) standard.

Standard	Description
MarinTrust	Certifies marine ingredient producers globally.
MarinTrust CoC	Allows marine ingredient users to demonstrate responsible sourcing.
MarinTrust Improver Programme	Encourages marine ingredient producers to implement improvements toward MarinTrust certification.

Combined world production of MarinTrust compliant fishmeal and fish oil

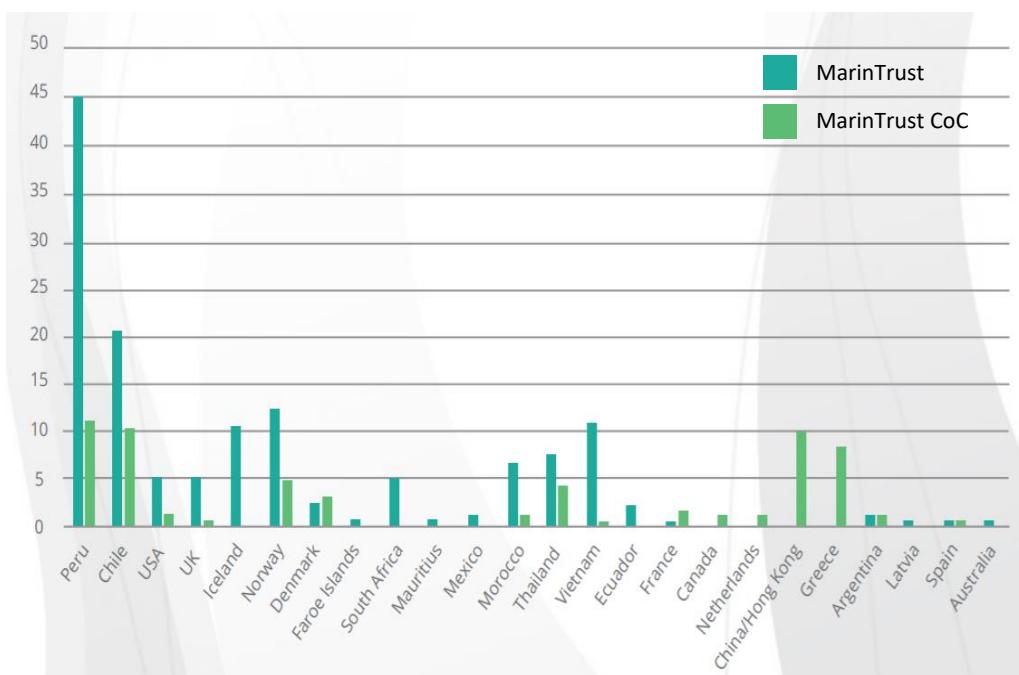


Source: [MarinTrust 2018/2019 Annual Report](#).

MarinTrust Requirements:

1. Source whole-fish raw material from the FAO Code of Conduct for Responsible Fisheries
2. Avoid the use of IUU fish or by-products of IUCN relisted fish
3. Manufacture under a robust quality control scheme

Global reach of MarinTrust standard and MarinTrust CoC



The number of Best Aquaculture Practices-certified farms grew by more than 60% from 2016 to 2019

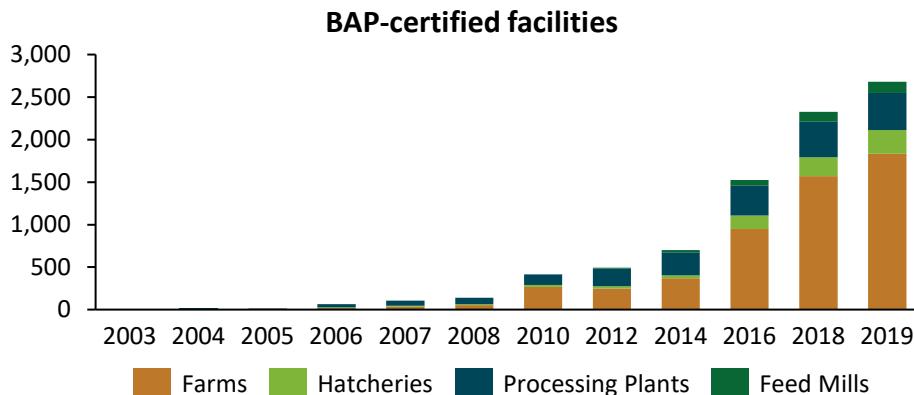


As part of the Global Aquaculture Alliance (GAA), Best Aquaculture Practices (BAP) has certified more than 2,681 facilities worldwide, including 1,833 farms.

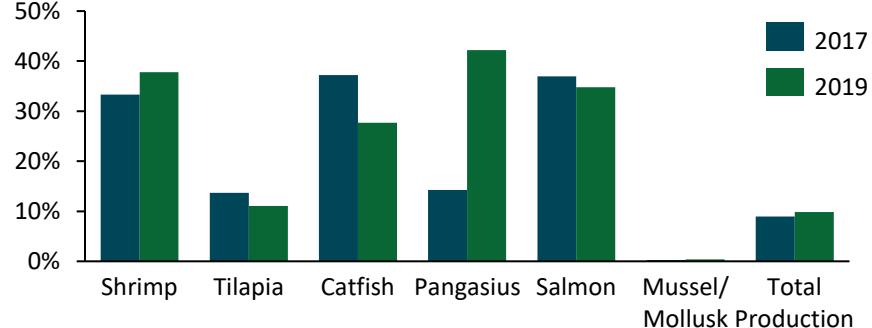
In October 2017, BAP became the first third-party aquaculture certification program to be benchmarked by the Global Sustainable Seafood Initiative. In 2018, BAP completed the Seafood Processing Standard, which encompasses wild and aquaculture processing.

GAA has developed standards for:

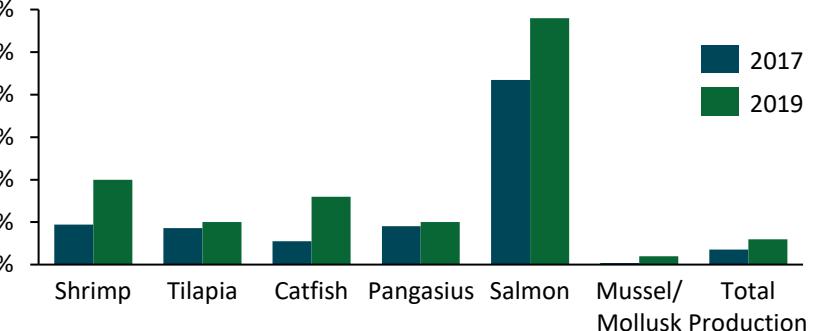
- Finfish & Crustacean Farms
- Salmon Farms
- Mollusk Farms
- Feed Mills
- Biosecurity Area Management
- Finfish, Crustacean & Mollusk Hatcheries & Nurseries
- Seafood Processing & Repacking Plants



BAP-certified plant volume as share of global production



BAP-certified farm volume as share of global production



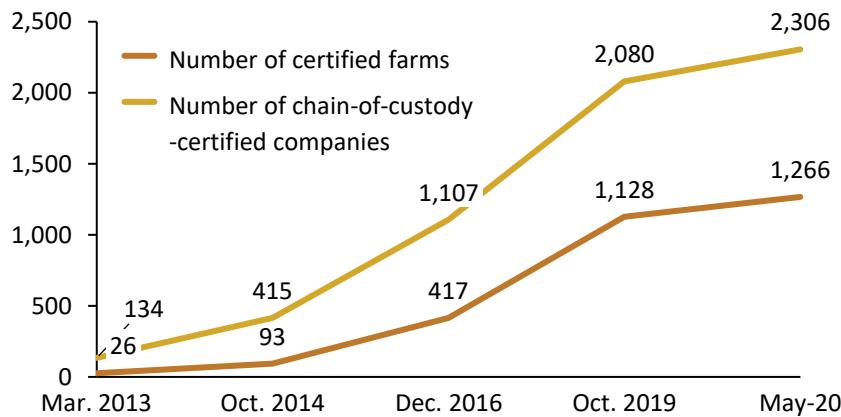
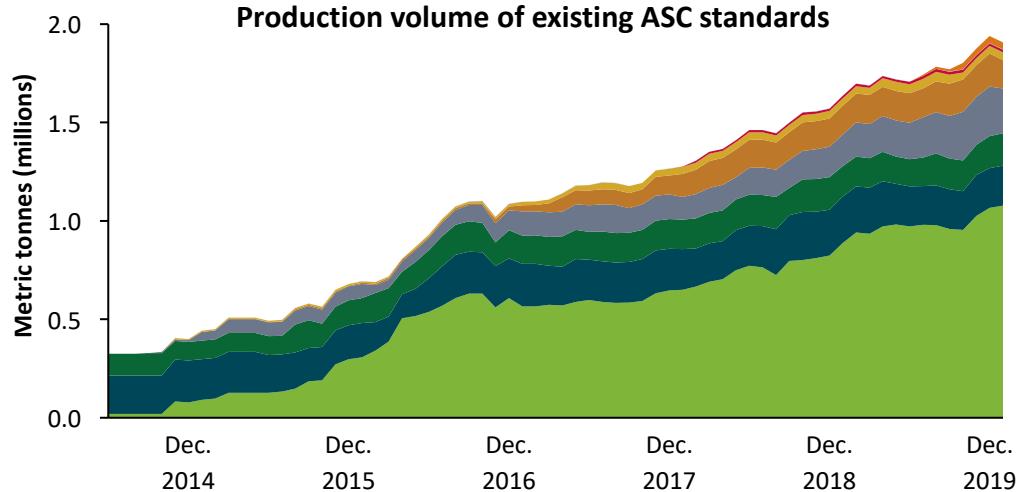
Source: Communication with Melanie Siggs, Elise Avallon, and Jane Bj, Global Aquaculture Alliance.

Note: 2017 and 2019 shares of global production for listed species groups are estimated based on FAO data from 2014. Additionally, 2019 BAP plant volume data fluctuate due to the nature of certification and recertification timelines. Fluctuations occur to a larger degree for processing plants than farms because plants tend to have larger production capacity. The BAP plant volume for tilapia decreased in 2019 somewhat due to the trade war, with moderate growth for salmon and significant growth for pangasius due to markets' increased demand.

The Aquaculture Stewardship Council has nearly doubled the number of certified farms in the last three years



The Aquaculture Stewardship Council (ASC) has scaled rapidly since its entry into the space in 2010. There are now nearly 19,500 approved ASC-labeled products (more than double from 2017). In the last three years, ASC has added standards for seabass, seabream and meagre, flatfish, and tropical marine finfish, as well as an ASC-MSC seaweed standard. ASC is currently developing standards for feed and farms.



Source: Communication with Sun Brage and Desiree Pesci, Aquaculture Stewardship Council.

GLOBALG.A.P. certifies over two million metric tonnes of aquaculture worldwide in 33 countries

The GLOBALG.A.P. aquaculture standard covers the key sustainability aspects for animal health & welfare, workers' health, safety and welfare, environment, and traceability for all states of production.

GLOBALG.A.P. has certified over two million metric tonnes of aquaculture worldwide and covers all species of finfish, crustaceans, and molluscs. In total, 32 finfish species, two crustacean species, and four mollusc species are available for certification. Additionally, GLOBALG.A.P. is recognized by GSSI for all species of finfish, crustaceans, and shellfish.

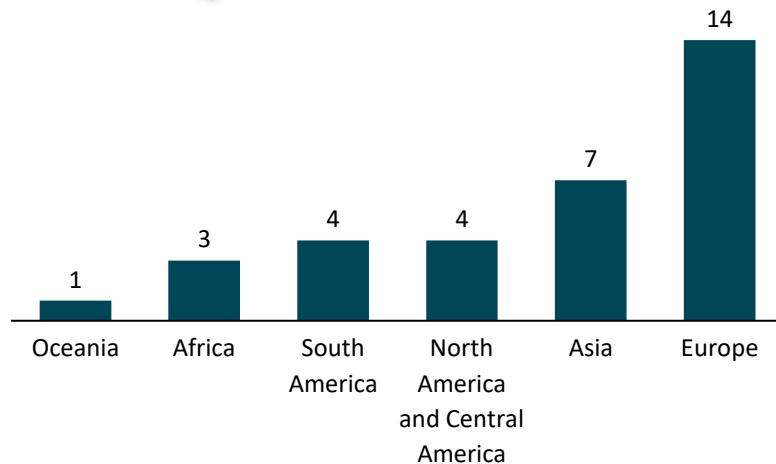
GLOBALG.A.P. Standards

Compound Feed: The GLOBALG.A.P. Compound Feed Standard requires aquaculture producers to source the compound feed used at the aquatic farming and hatchery levels from reliable suppliers.

Aquaculture Hatcheries and Farms: The GLOBALG.A.P. Aquaculture Standard applies to a diversity of fish, crustaceans and molluscs and extends to all hatchery-based farmed species, as well as the passive collection of seedlings in the planktonic phase. It covers the entire production chain, from broodstock, seedlings and feed suppliers to farming, harvesting and processing.

Chain of Custody: The GLOBALG.A.P. Chain of Custody Standard gives aquaculture producers a high level of transparency and integrity by identifying the status of the product throughout the entire production and supply chain, from farm to retailer.

33 countries have aquaculture producers under GLOBALG.A.P. certification*



*As of August 2019.

Source: Communication with Roberta Anderson and Valeska Weymann, GLOBALG.A.P.

The past five years has seen an increase in activity at the intersection of human well-being and seafood (1 of 2)

CEA surveyed the intersection of social/human rights and seafood as a part of the 2020 Global Landscape Review of Fishery Improvement Projects. The information below is not intended to be comprehensive but is illustrative of the growing concern for humans in the seafood sector.

	FIP Implementers*	Frameworks & certifications	Assessment tools & methodologies
NGO	<ul style="list-style-type: none"> ProNatura Noroeste AC MDPI Conservation International SmartFish AC Sustainable Fisheries Partnership Blue Ventures COBI 	<ul style="list-style-type: none"> Fair Trade USA Capture Fisheries Standard Monterey Framework for Social Responsibility Responsible Fishing Standard Marine Stewardship Council Chain of Custody Labor Guidelines Certifications and Ratings Collaborative – Framework for Social Responsibility in the Seafood Sector Roadmap for Improving Seafood Ethics (RISE) AENOR's Responsible Tuna Fishing (RTF) Conform British Retail Consortium (BRC) IFFO RS Version 2.0 	<ul style="list-style-type: none"> Social Responsibility Assessment Tool (SR Scorecard) Ocean Outcomes' Rapid Assessment Tools Future of Fish Fisheries Development Model Sustainability Incubator's Labor Safe Screen Seafood Slavery Risk Tool
Industry-affiliated	<ul style="list-style-type: none"> APRI PACPI IPNLF OPAGAC 		
Industry	<ul style="list-style-type: none"> Del Pacifico Seafood Cox's Seafood Saravia SeaDelight Anova 		
For-profit	<ul style="list-style-type: none"> Sustainability Incubator Key Traceability BlueYou/Meliomar 		

26 FIPs self-report on “Social Impact” in the “Additional Impacts” comment field on FisheryProgress. These FIPs span a range of commodities but are predominantly in tuna (12) and crab (4), but also in demersal fish (3), shrimp (2), and squid, lobster, yellowtail, snook, and octopus (1 each). **These FIPs occur predominantly in Mexico (8), Indonesia (7), and the high seas (4).** As many of these FIPs are in the early stages of implementation and there is not good comparative baseline data on social impacts, **it is too early to draw conclusions about impact or effectiveness.**

*There is no standard working definition of what constitutes a “social FIP.” Instead, CEA observed a range of activity on social issues affiliated with specific FIP implementers, frameworks and certifications, and utilizing various assessment tools and methodologies. There is no consistent set of indicators used or tracked, and no consistent mechanism for reporting on progress across these different actors, although FisheryProgress does offer a text field under “Additional Impacts” where FIPs can report activities and progress as it relates to social dimensions of their work. There is also a universe of FIP-adjacent activity to address social issues in fisheries, such as the work of multilateral institutions, national governments, research institutions, and NGOs.

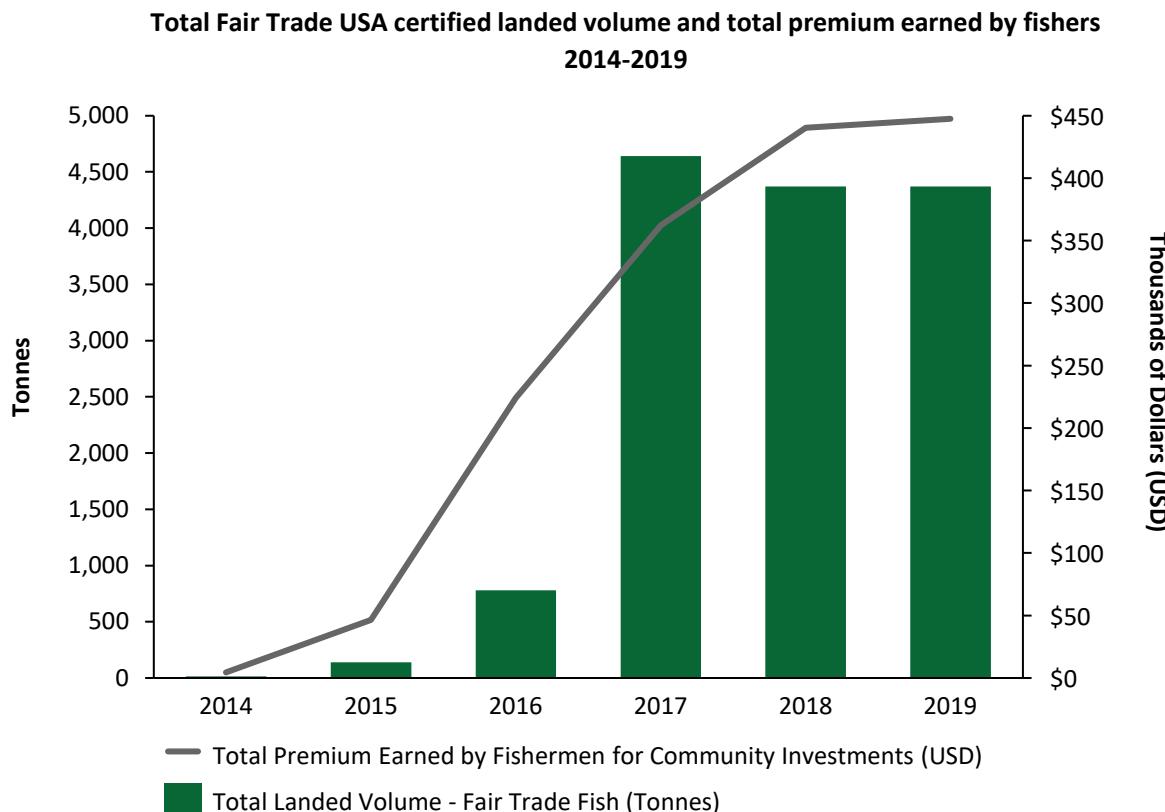
The past five years has seen an increase in activity at the intersection of human well-being and seafood (2 of 2)

	FIP-adjacent activity	Relevant policy agreements	Additional resources
NGO	<ul style="list-style-type: none"> Oxfam Greenpeace Environmental Justice Foundation International Labor Rights Forum Issara Fisheries Labor Improvement Project Verite Seafood Watch Partnership Assurance Projects 	<ul style="list-style-type: none"> International Labour Organization (ILO) Work in Fishing Convention No. 188 (November 2017) IMO Cape Town Agreement (will enter into force in 2022) Southeast Asian Forum to End Trafficking in Persons and Forced Labour of Fishers ("The SEA Forum for Fishers") 	<ul style="list-style-type: none"> Conservation Alliance for Seafood Solutions Common Vision and social responsibility resources Certification and Ratings Collaborations' Framework for Social responsibility in the Seafood Sector (July 2018) FishWise's 2019 report, Open Water: Guidance on Vessel Transparency for Seafood Companies. Policies and Recommendations to Improve the Safety of Fisheries Observers Deployed in Tuna Fisheries (June 2018) FishWise's 2018 report, The Links Between IUU Fishing, Human Rights, and Traceability Fisheries Improvement Projects as a governance tool for fisheries sustainability: a comparative analysis. PLoS One. 2019 Tracking Progress: Assessing Business Responses to Forced Labour and Human Trafficking in the Thai Seafood Industry. (January 2019)
Multilateral	<ul style="list-style-type: none"> FAO Small-Scale Fisheries Guidelines; Guidelines for Social Responsibility in the Seafood Industry International Labor Organization SEA Fisheries Project WorldFish Center Too Big To Ignore University of Technology, Sydney 	<p>Crona et al. (2019) was the first study to look at producer-level participation in FIPs. They found that producers participate actively in less than 25% of FIPs studies, and that producers lead 7% of FIPs.</p>	
Industry collaborations	<ul style="list-style-type: none"> Asia Seafood Improvement Collaboration (ASIC) Seafood Task Force SeabOS (Business for Ocean Stewardship) Consumer Goods Forum Social Auditing Framework 		

Fair Trade USA certificate holders have distributed over \$1.5 million dollars in premiums to fishing communities since 2014

Since Fair Trade USA began certifying seafood in 2014, the following benchmarks have been met as of December 2019:

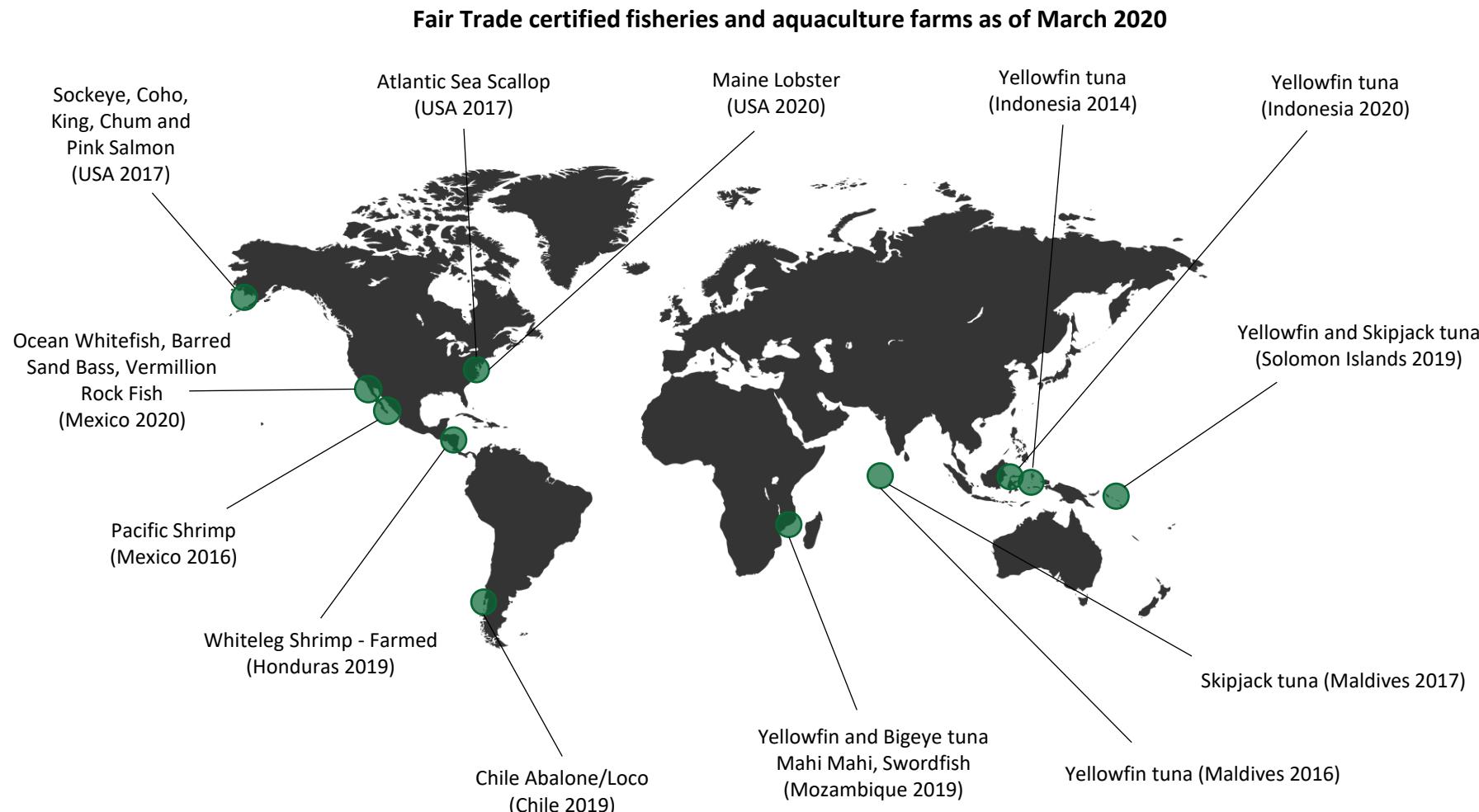
- Fishers earned over \$1.5 million in premiums to reinvest in their communities.** An estimated \$457,000 (30% of those funds) supported environmental initiatives like FIPs, data collection, habitat restoration, education, and community-based efforts against IUU fishing.
- Fair Trade certificate holders employ over 10,000 fishers and workers.**
- Fair Trade USA expanded into aquaculture** through a partnership with the Aquaculture Stewardship Council. The first aquaculture farm in Honduras was dual certified in 2019.



Year	2014	2015	2016	2017	2018	2019	2020*
Total number of certificate holders	1	1	3	6	6	9	13

Source: Communication with Rui Bing Zheng at Fair Trade USA.
*2020 data as of March 2020.

13 Fair Trade USA certificate holders harvest from 12 fisheries and one aquaculture farm



Source: Communication with Rui Bing Zheng at Fair Trade USA (March 2020)

CONSUMPTION & TRADE DYNAMICS

Key takeaways

- China's seafood consumption continues to be the highest globally — three times higher than the next largest consumer.
- In the U.S., seafood consumption has been on the decline since 2014, with the exception of shrimp consumption which has increased.
- The quantity of globally-traded high-value seafood has continued to boom. Markets beyond the U.S., the E.U., and Japan — especially those in South and Southeast Asia — are among the fastest growing importers of key commodities like shrimp and tuna, though in some cases the product is destined for re-export. These South and Southeast Asian markets are largely displacing Japan's market share.
- Markets with strong sustainable seafood demand in the U.S., Canada, and much of Northern Europe made up nearly half of global imports by value in 2019, though this includes intra-continental trade that has no leverage on producer countries in need of fisheries management improvements.

METRICS INCLUDED:

Global seafood consumption

Seafood trade flow data

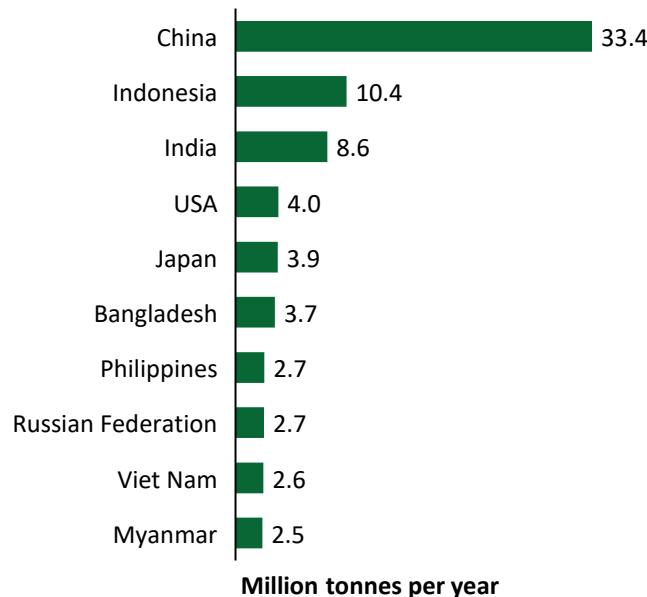
Key commodity trade flow trends

Chinese seafood consumption was more than three times higher than the next largest consumer

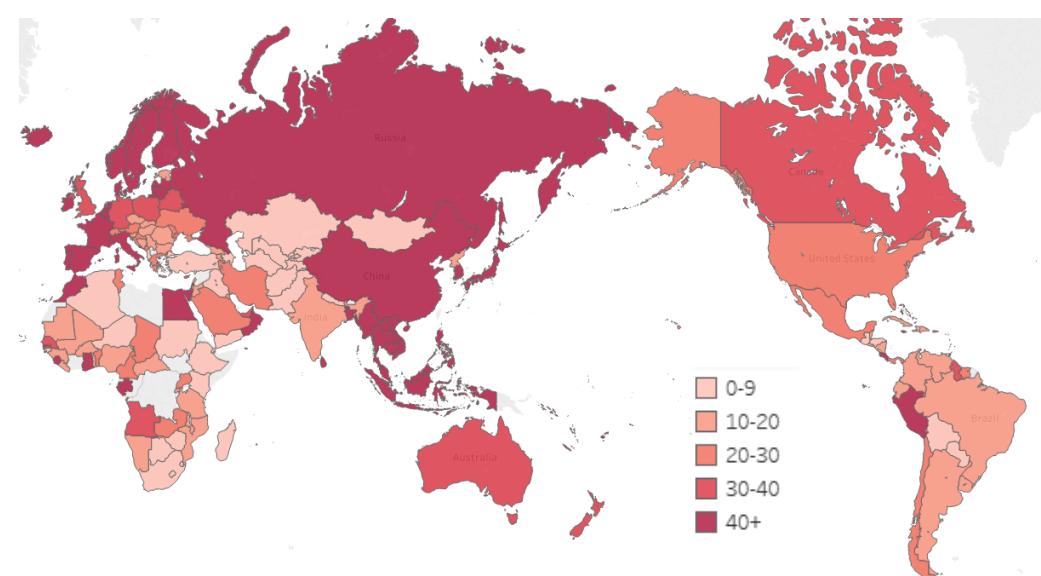
China has far and away the largest national seafood consumption, the result of above-average per capita consumption and a large population. 44% of their consumption is freshwater fishes, and another quarter is mollusks.

Per capita consumption is highest in small island nations, though their total consumption is relatively minor. Western Europe, Northern Europe, Oceania, and Southeast Asia round out the remaining regions with the highest seafood consumption per capita.

Total consumption of seafood (Top 10 countries)

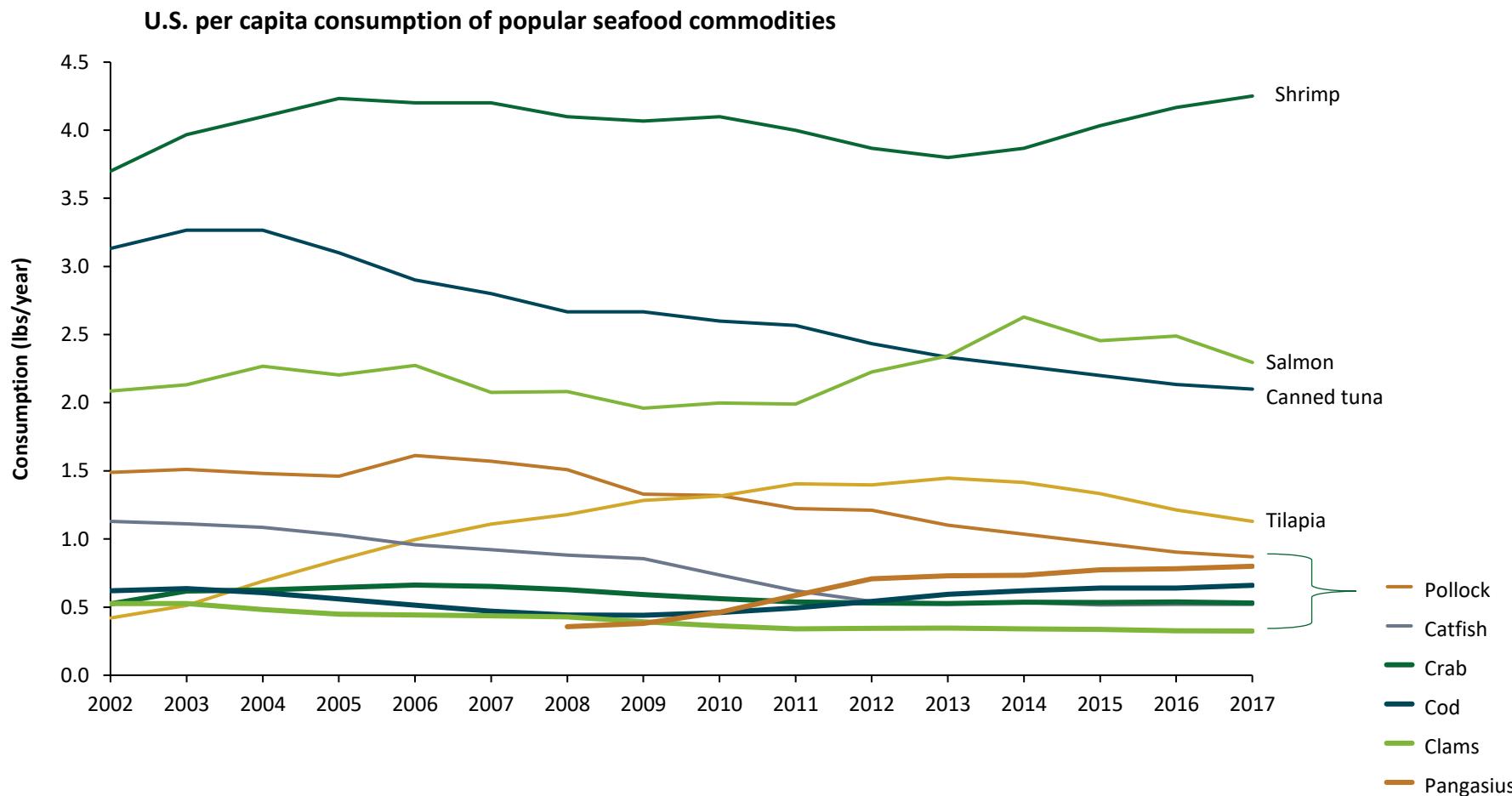


Per-capita food supply from seafood (kcal/persons/day), 2017



Source: FAO Stat, "Food Balance Sheets", 2020

In the U.S., shrimp consumption is rising while consumption of most of the most popular fish products have fallen since 2014



Source: U.S. National Fisheries Institute, three year running average

Seafood remains the most highly internationally traded commodity globally, with huge volumes moving within and between continents

TRADE BY VALUE (billions USD, 2018)

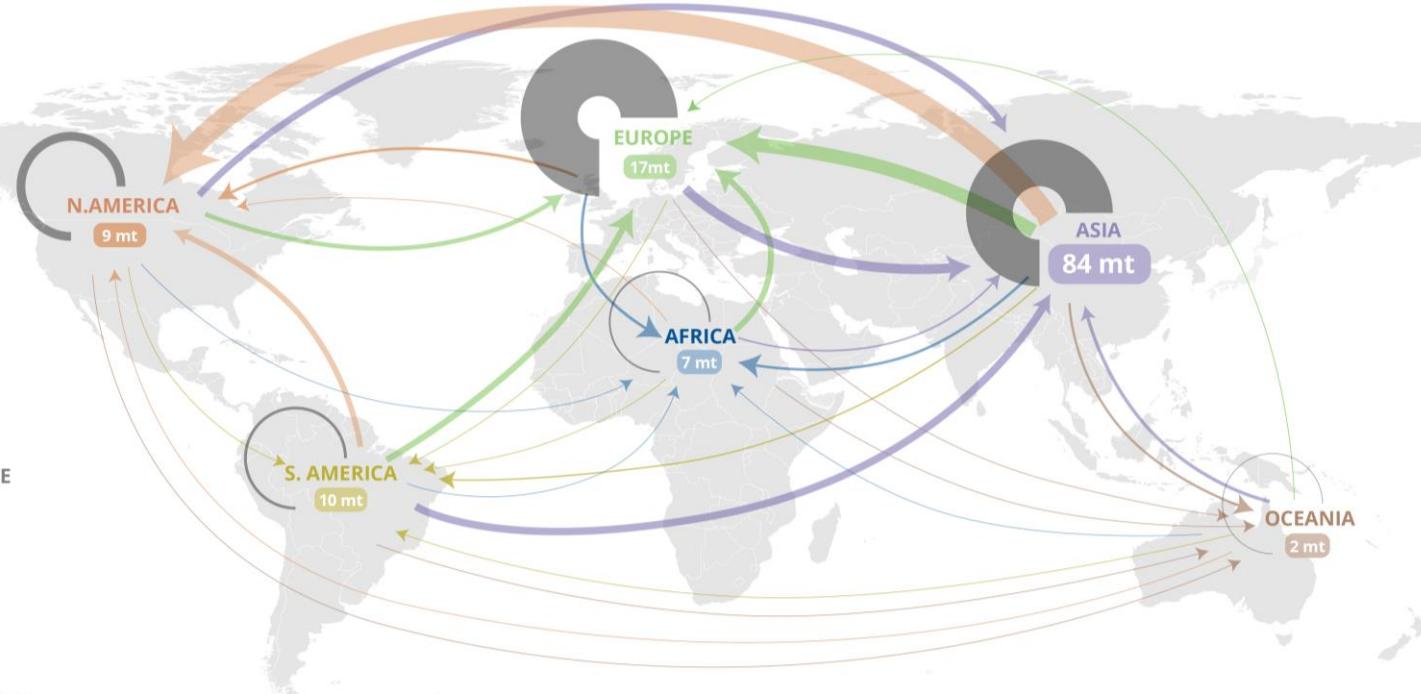
- AFRICA
- ASIA
- EUROPE
- N.AMERICA
- OCEANIA
- S.AMERICA
- Internal trade

N.America includes Central America and Caribbean.
Europe includes Russia.

Total value of trade is
\$150 billion USD. (2018)

The thinnest line weight
represents values less than
1 billion USD.

PRODUCTION BY VOLUME mt (2017)



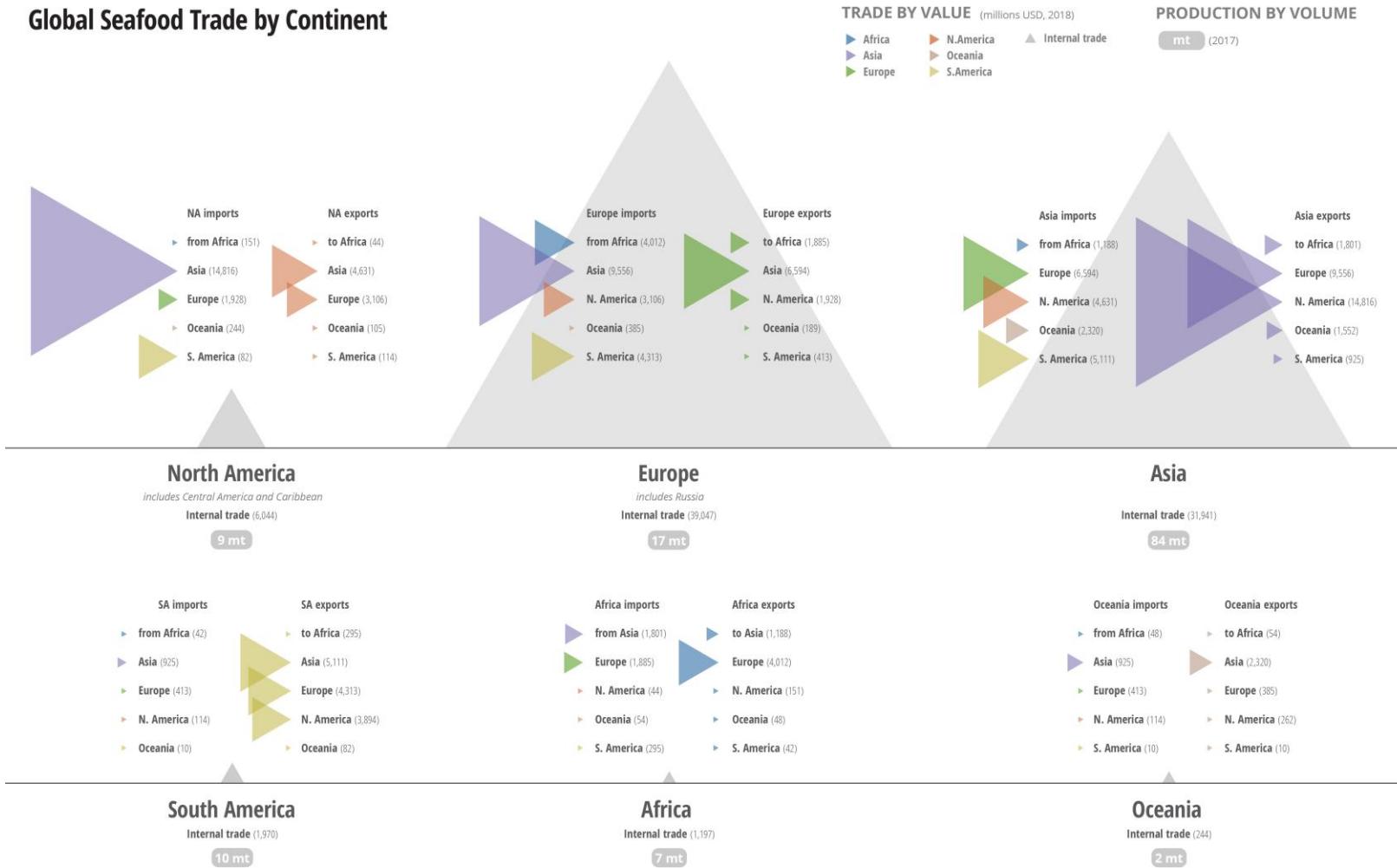
TRADE BALANCE BY REGION (millions USD, 2018)

N. America		S. America		Europe		Africa		Asia		Oceania	
	Imports from		Exports to		Imports from		Exports to		Imports from		Exports to
Africa	\$151		\$44	Africa	\$42		\$295	Africa	\$4,012		\$1,885
Asia	\$14,816		\$4,631	Asia	\$925		\$5,111	Asia	\$9,556		\$6,594
Europe	\$1,928		\$3,106	Europe	\$413		\$4,313	(internal)	\$39,047		\$39,047
(internal)	\$6,044		\$6,044	N. America	\$114		\$3,894	N. America	\$3,106		\$1,928
Oceania	\$262		\$105	Oceania	\$10		\$82	Oceania	\$385		\$189
S. America	\$3,894		\$114	(internal)	\$1,970		\$1,970	S. America	\$4,313		\$413

Sources: TradeMap.org; FishSTatJ 2017

European and Asian intra-continental trading accounts for the largest share of seafood trade, followed by imports from Asia into North America

Global Seafood Trade by Continent



Sources: TradeMap.org; FishStatJ 2017

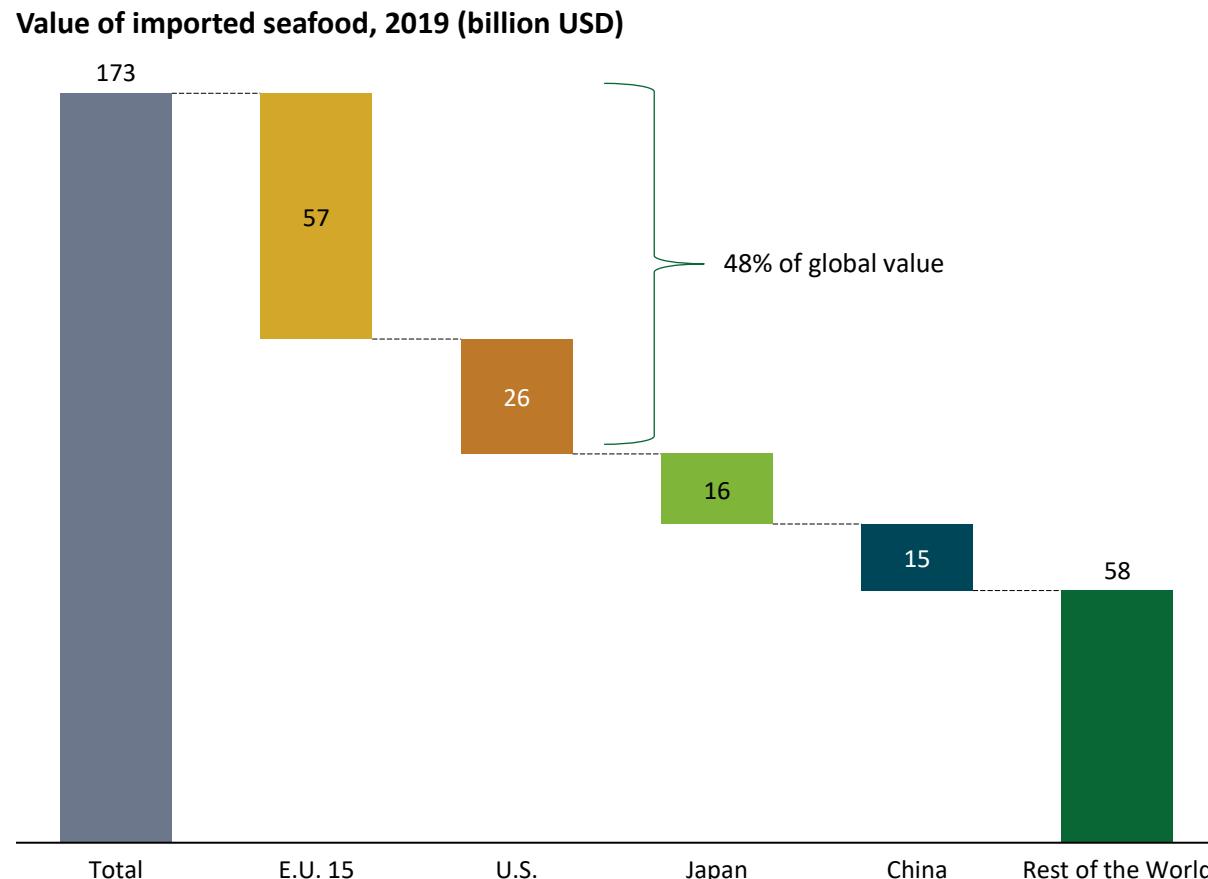
The E.U. and the U.S. are the largest importers of seafood, accounting for nearly half of global value. China only accounts for 9% of imports by value.

While decreasing in global share, the U.S. and E.U.* remain the highest value importers of seafood, accounting for nearly half (48%) of global imported value. This is down from 52% in 2016.

Within the E.U., roughly half of the value is going to countries with a developed sustainability market such as Germany, the U.K., Netherlands, Sweden, and Denmark. The other half is imported into the primarily southern European countries of France, Spain, Italy, and Portugal.

Japan is the next largest consumer, at 9% of global import value. Japan primarily imports tuna and shrimp.

While China is the largest consumer of seafood globally, its large domestic production and lower value imports put it at 8.7% of global import value.

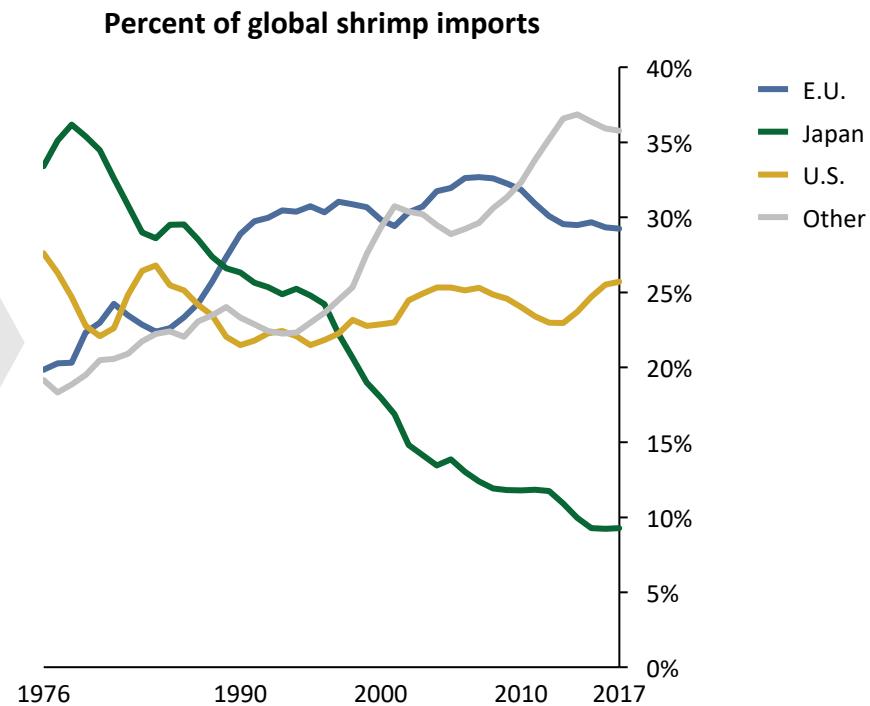
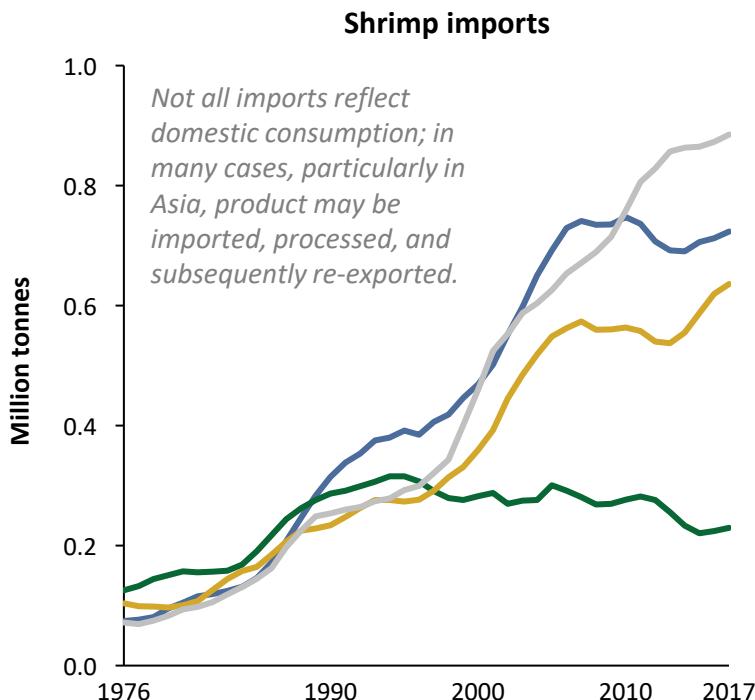


Source: TradeMap.org, grouped for all seafood commodities

Commodity of interest – shrimp

Combined, the U.S., the E.U., and Japan imported roughly 64% of globally traded shrimp in 2017, but this share is declining. Japan, once the largest importer, has fallen to less than 10% of global imports for the first time in 2016.

The E.U., as well, has ceded its top seat to the remainder of the market. The U.S. has risen in total shrimp imports more or less in line with global market trends; it has held at roughly one-quarter of imports globally over the last decade.



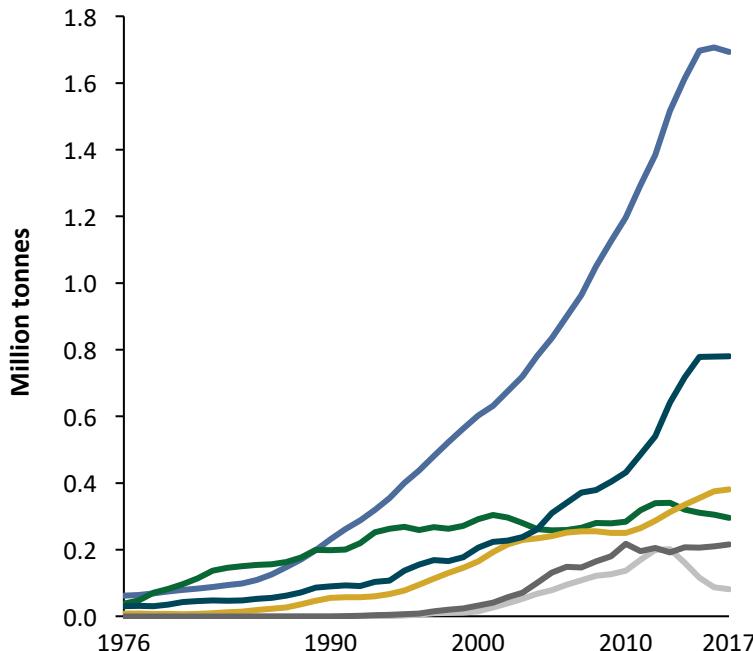
Source: FAO, FishStat. Three year running averages.

Commodity of interest – salmonids

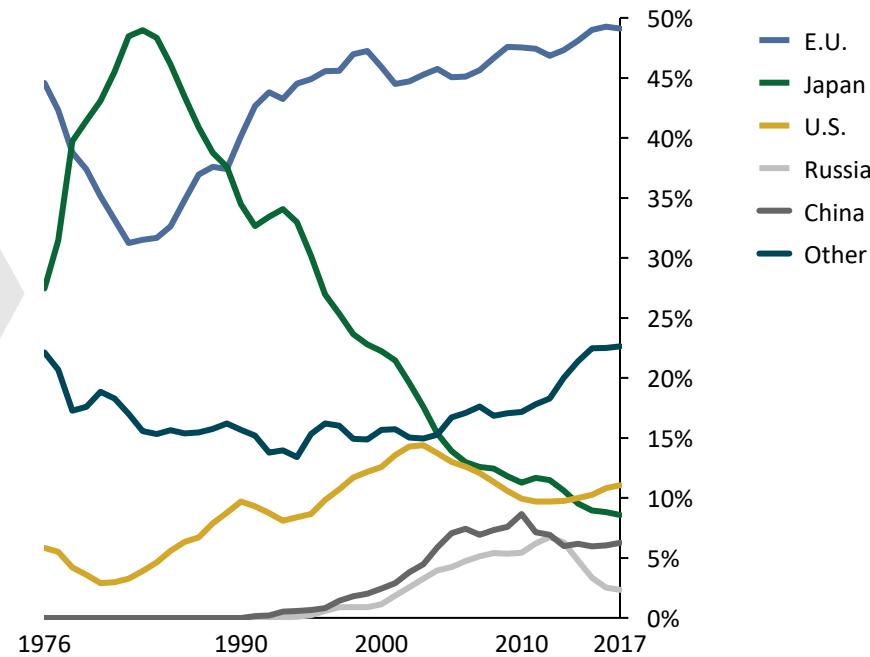
The E.U. remains the top salmonid importer, at nearly half of total imports and increasing, though this is partially artificially inflated by intra-E.U. trade for processing. Japan, the former top importer, has plummeted in its global share of imports to less than 10%.

China and Russia both had increasing shares of global imports until the early twenty-teens and have since declined in share of global imports. The U.S. has remained at roughly 10% of global imports.

Salmonid imports



Percent of global salmonid imports

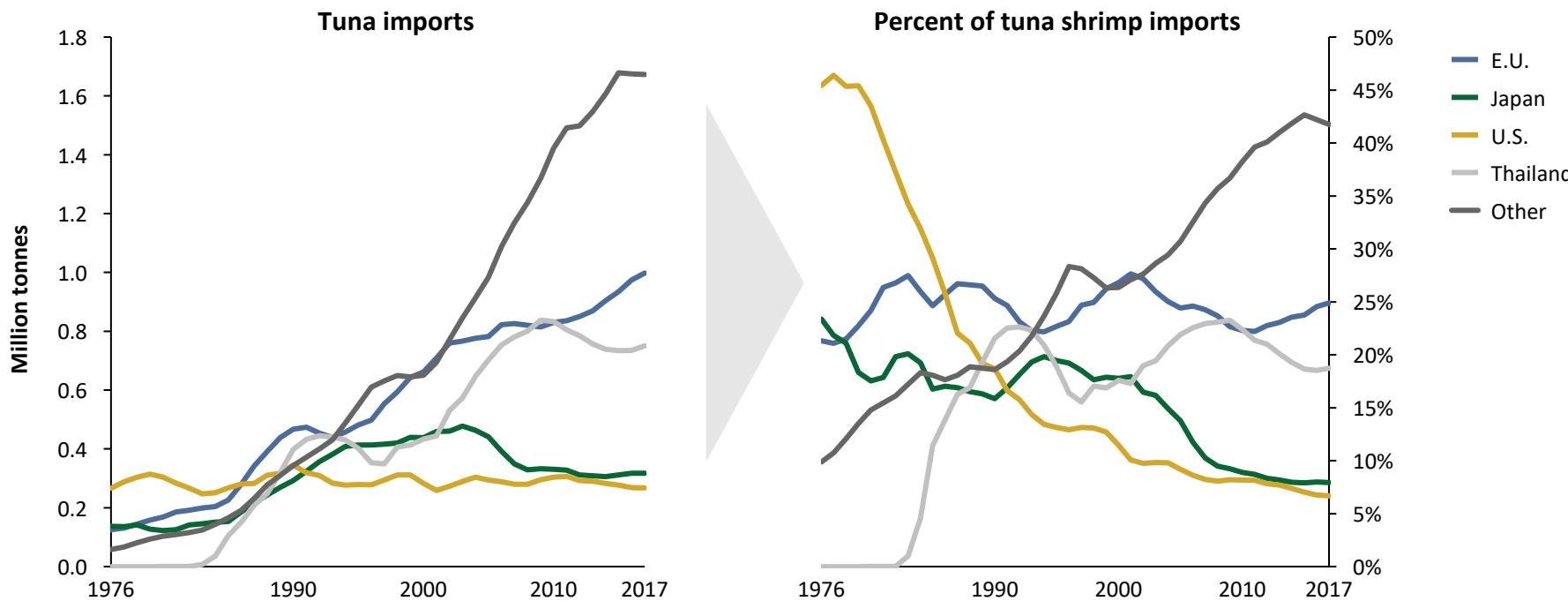


Source: FAO, FishStat. Three year running averages.

Commodity of interest – tuna*

Tuna imports to countries outside the U.S., the E.U., and Japan have more than doubled in the two decades leading up to 2017, again driven in part by imports for processing canning (e.g., Thailand). E.U. imports also grew, though less dramatically, while imports into the U.S. and Japan have remained relatively declined in recent years.

The E.U., Japan, and the U.S. accounted for only 40% of imports in 2017, down from 90% of imports in 1976. This likely reflects the rise of processing and re-exporting of tuna in countries like Thailand and China.



*including billfishes and bonitos

Source: FAO, FishStat. Three year running averages.

BUSINESS RELATIONSHIPS & SUPPLY CHAIN ENGAGEMENT

Key takeaways

- In North America and Europe, top retailers' commitments to sustainable wild-caught seafood showcase industry leadership. Japan is showing emerging buyer demand for sustainable seafood.
- In 2018, CEA scanned the precompetitive platform landscape and found that mid-supply chain companies are engaging in sustainable seafood primarily more through platforms than through one-on-one NGO partnerships. While this progress is promising, platform effectiveness remains elusive for some.
- After seeing success in the U.S. retailer landscape, Greenpeace is shifting its focus to the U.S. Food Service Sustainability Scorecard, where only three companies receive a passing score.
- Beyond top retailers, progress remains slow and no new major sustainable seafood partnerships have emerged in fast food, distribution, or contract catering.
- For the first time, CEA tracked independent seafood commitments where possible (as opposed to only one-on-one NGO partnership commitments). However, our ability to verify a company's independent sustainable seafood commitment remains limited.
- Since 2017, industry has started to make commitments to social responsibility in seafood, particularly based on the Monterey Framework. This is a major new trend for the movement that is in its initial stages and should be monitored over time to better understand both growth in commitments and implementation.

METRICS INCLUDED:

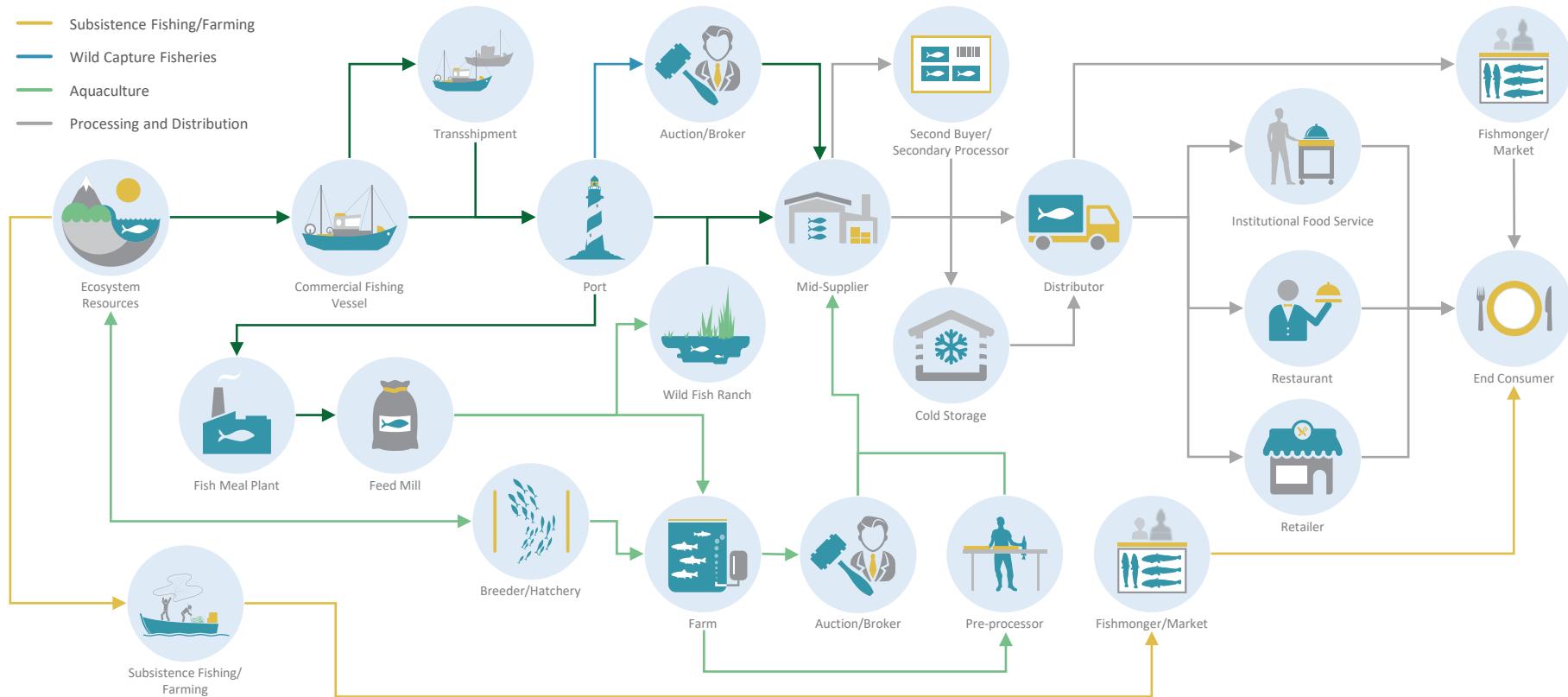
Corporate-NGO partnerships

Greenpeace's scorecard data

Precompetitive platforms

Seafood supply chains are varied and have many actors in type and number

The seafood supply chain is complex. While we primarily emphasize supply chain categories such as end-buyers, mid-supply chain, and local industry and producers, there is a much more intricate series of interactions taking place throughout the supply chain.

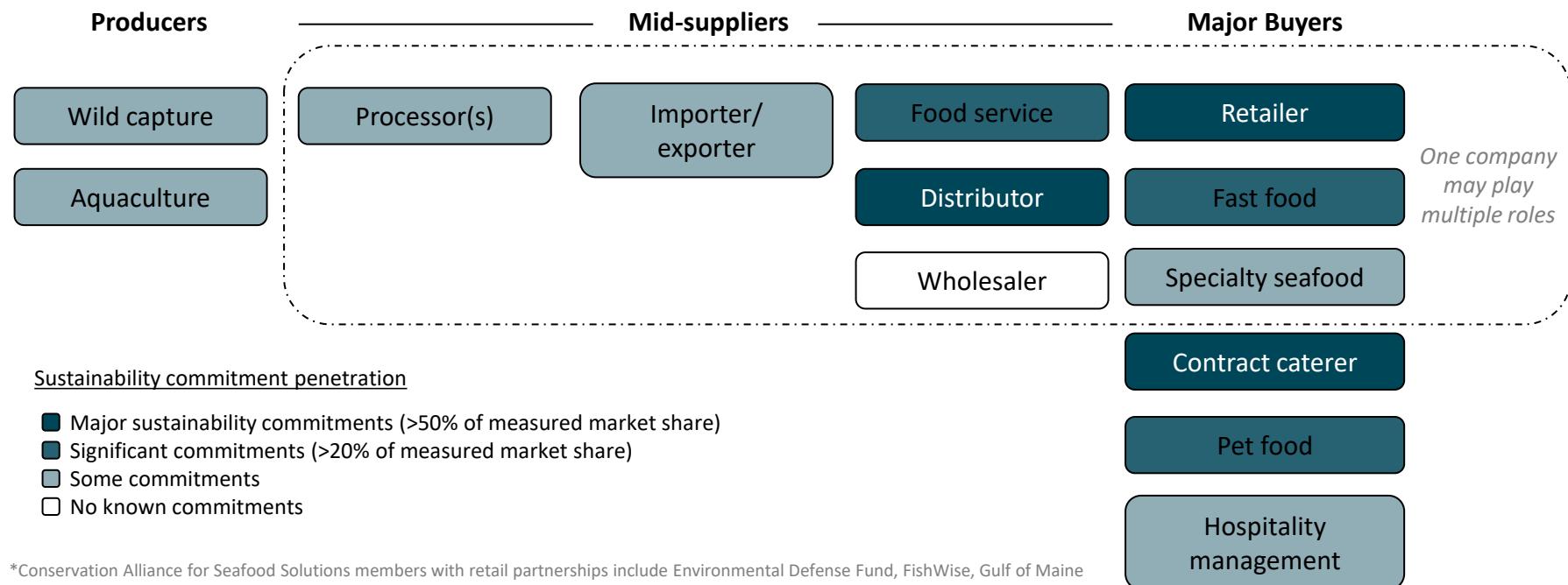


Source: Graphic provided by Ross Strategic, Global Impact Advisors, and EON Impact Consulting, adapted from FishWise Simplified Diagram of Seafood Supply Chains [infographic](#).

New sustainable seafood commitments continue to emerge, with recent growth in hotel chains, pet food manufacturing, and European retailers

Most sustainable seafood commitments are made by retailers in North America and the E.U., though commitments are emerging in Mexico and Japan as well. These commitments exist across almost every segment of the supply chain, with most mid-supply chain companies choosing to engage with sustainable seafood through precompetitive platforms rather than one-on-one partnerships with NGOs. Since 2017, notable new U.S. NGO-partnership commitments include a major casual dining retailer, hotel chain, and petfood company, in addition to new commitments from companies with smaller market shares.

Though commitments take many forms, the most common include: 1) pledges to source from fisheries that are either certified (e.g., MSC, ASC, GAA), green or yellow rated (e.g., Seafood Watch, Ocean Wise, WWF) or engaged in FIPs, or 2) commitments to traceability and chain of custody through partnership with NGOs*. The following slides focus on wild-seafood commitments involving partnerships with NGO members of the Conservation Alliance for Seafood Solutions. While we noted independent sustainable seafood commitments where possible, we cannot verify the validity of and progress made toward these commitments.



*Conservation Alliance for Seafood Solutions members with retail partnerships include Environmental Defense Fund, FishWise, Gulf of Maine Research Institute, Monterey Bay Aquarium Seafood Watch, New England Aquarium, Ocean Wise, Sustainable Fisheries Partnership, and World Wildlife Fund, among others.

After a strategic planning process in 2018-2019, the Conservation Alliance for Seafood Solutions developed a new 5-year strategic plan

The Conservation Alliance for Seafood Solutions (Conservation Alliance) is a community of 42 organizations that believe “seafood production is a powerful driver of change for both the health and biodiversity of our oceans and the economic and social well-being of individuals and communities around the world.”

In 2008, the Conservation Alliance developed the *Common Vision for Sustainable Seafood*, a roadmap that seafood businesses can use to develop and implement practices that support environmentally sustainable fishing and aquaculture. The Conservation Alliance recognizes the urgent need to foster large-scale change as fast as possible. In 2018, the Conservation Alliance launched a strategic planning process to determine how to better work together to achieve its vision.

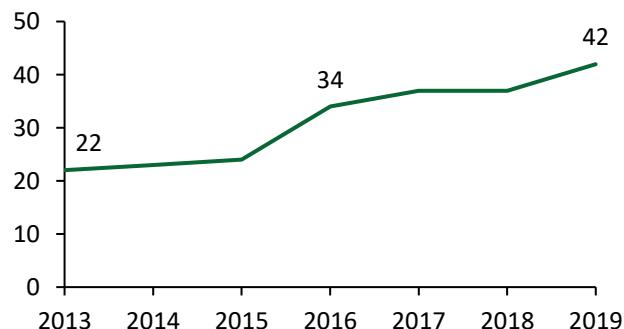
The Conservation Alliance’s Strategic Plan (2020-2024)¹

SCOPE	 The commercial production of seafood worldwide
VISION	 A world in which seafood production is environmentally sustainable as well as socially and financially responsible
10-YEAR GOAL	 By 2030, at least 75% of global seafood production is environmentally sustainable or making verifiable improvement, and adequate safeguards are in place to ensure social responsibility
APPROACH	 Accelerate and increase the collective impact of our community

Conservation Alliance Progress:

- Updated the Alliance Fishery Improvement Project Guidelines to encourage FIPs to address social challenges within their fisheries, consistent with the revised Alliance Common Vision and Monterey Framework for Social Responsibility in Fisheries.
- Established a Social Advisory Panel, where Alliance delegates with expertise in social responsibility discuss strategy and share ideas.
- Released a 5-year strategic plan for 2020-2024 that focuses on accelerating and increasing the collective impact of the community.
- Hosted in-person events to promote networking, amplify member projects and demonstrate the impact of the community’s collaborative work.
- Continues to explore ways to track and evaluate the progress of both corporate sustainable seafood commitments and community efforts.

Conservation Alliance membership growth over time



For more information, see the [Conservation Alliance Strategic Plan](#).

Source: Communication with Meaghan Hudgins, Conservation Alliance for Seafood Solutions

The Monterey Framework for Social Responsibility was developed to advance commitments to human rights that businesses are now starting to adopt

In 2017, a coalition of NGOs and businesses co-developed a definition of social responsibility for the seafood sector. Referred to as the “Monterey Framework” (published in *Science*), this definition is now integrated with the Conservation Alliance for Seafood Solutions’ Common Vision for Sustainable Seafood and the Seafood Certification and Ratings Collaboration’s Framework for Social Responsibility. 34 authors and 21 institutions helped create the Framework. The three core principles of the Monterey Framework include:

Protect human rights, dignity and access to resources

- Fundamental human rights are respected, labor rights are protected, and decent living and working conditions are provided, particularly for vulnerable and at-risk groups.
- Rights and access to resources are respected and fairly allocated and respectful of collective and indigenous rights.

Ensure equality and equitable opportunity to benefit

- Recognition, voice, and respectful engagement for all groups, irrespective of gender, ethnicity, culture, political, or socioeconomic status.
- Equal opportunities to benefit are ensured to all, through the entire supply chain.

Improve food and livelihood

- Nutritional and sustenance needs of resource-dependent communities are maintained or improved.
- Livelihood opportunities are secured or improved, including fair access to markets and capabilities to maintain income generation.

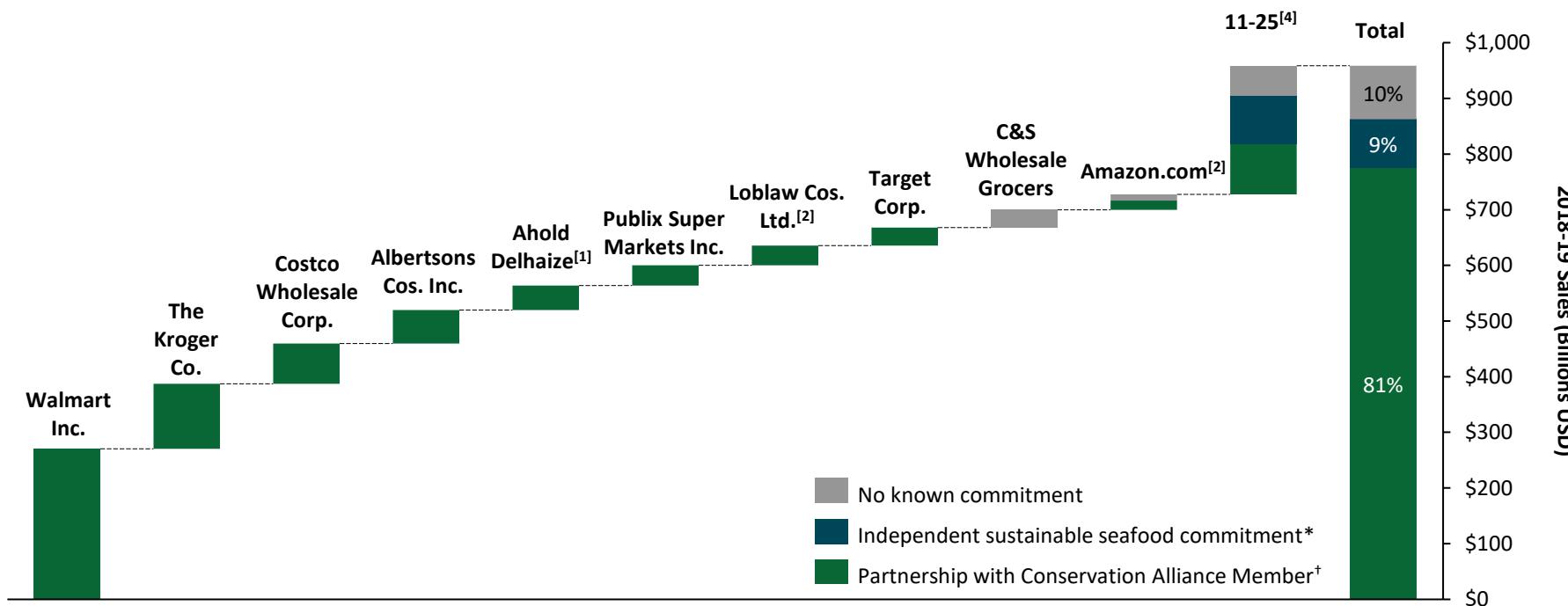
The following businesses have made voluntary commitments to social responsibility through the Monterey Framework*:



*Currently, business commitments to social responsibility are not systematically tracked by the sustainable seafood community.
Source: Communication with Elena Finkbeiner and Ana Guzman at Conservation International

81% of the top 25 North American retailers have sustainable seafood partnerships with NGOs, 9% have commitments without NGO partnerships

Several major North American retailers promote seafood sustainability practices on their websites or in press releases.



Top 25 North American Retailers – Total Sales (Billions USD)

*Retailer has a dedicated webpage for seafood sustainability describing sourcing commitments

†Retailer has an official partnership with an NGO member of the Conservation Alliance for Seafood Solutions

[1] In 2016, Ahold and Delhaize Group merged to form Ahold Delhaize. GMRI was the NGO partner of Delhaize Group and more recently advises Ahold Delhaize.

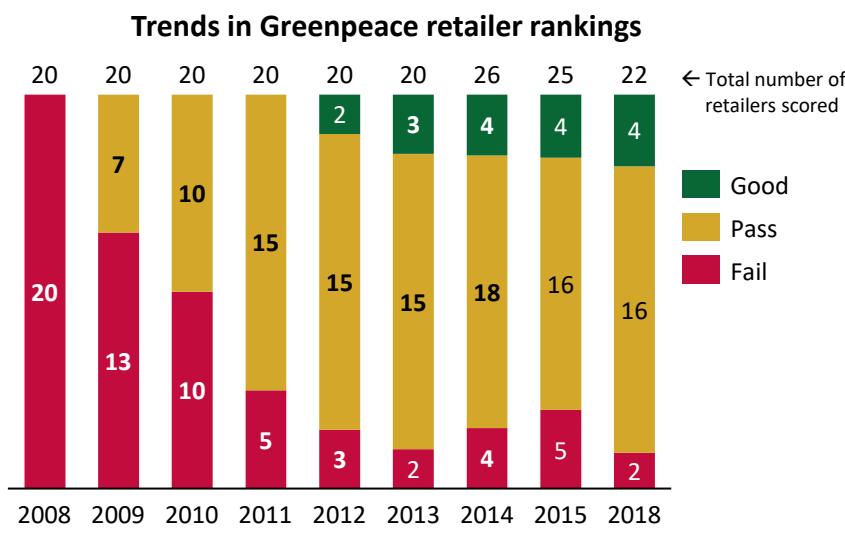
[2] Total sales includes Whole Foods, which has a partnership with Monterey Bay Aquarium Seafood Watch

[3] As of February 2020, three retailers (BJ's, Wegmans, and Southeastern) in this category cite NGO partnerships on their website that no longer exist

Sources: [Supermarket News](#); communications with Conservation Alliance members

After a decade of scoring U.S. retailers on seafood sustainability, 90% received passing scores by Greenpeace

The Greenpeace Supermarket Seafood Sustainability Scorecard rates U.S. retailers on whether they have a sustainable seafood sourcing policy, sustainability initiatives, labeling and transparency, and/or sales of “red list” seafood. Cumulative scores have improved significantly since 2008, with 20 out of 22 retailers receiving a passing score in 2018, ten years after every single retailer failed the first assessment. No scorecards were published in 2016 or 2017.

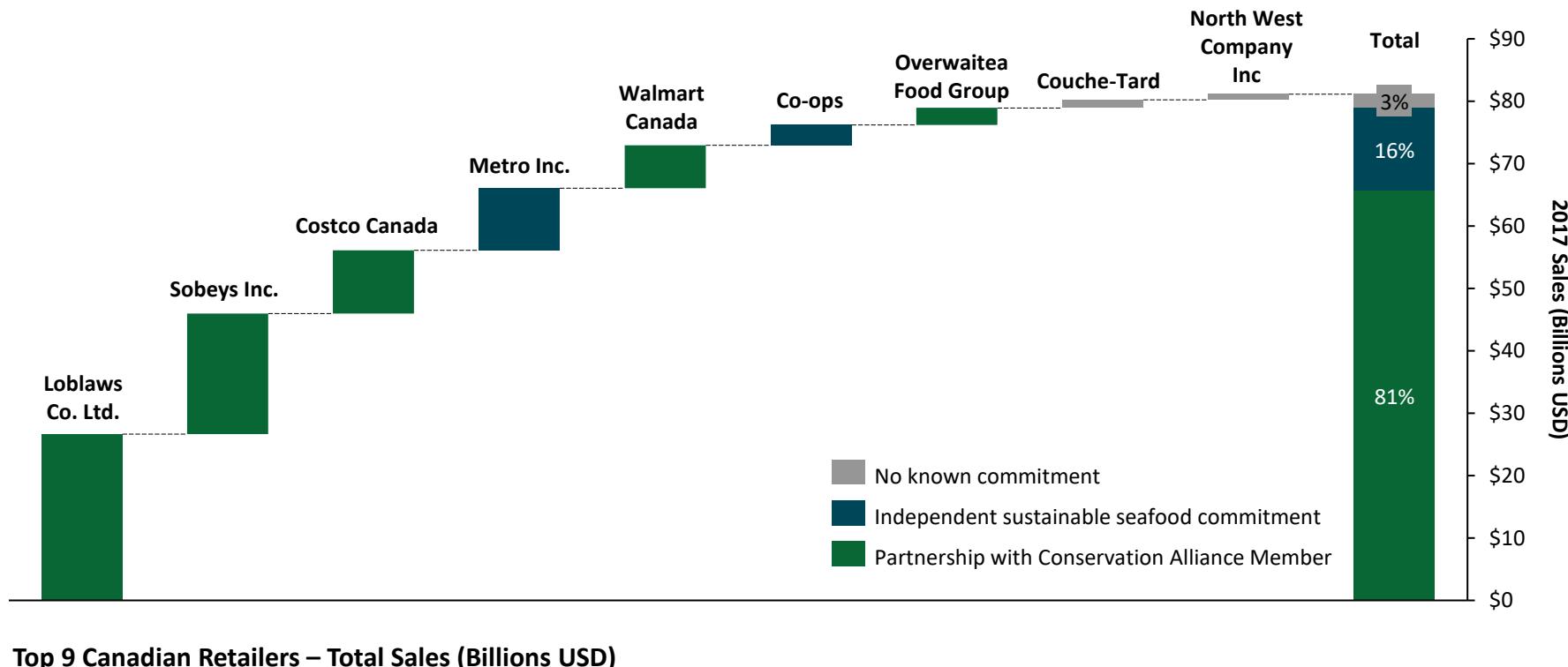


Source: Greenpeace, “[Carting Away the Oceans 10](#),” 2018.

2018 Greenpeace Retailer Scorecard

#1	WHOLE FOODS MARKET	80.4	#12	SUPERVALU	60.4
#2	HUYFOODS	79.8	#13	Walmart	60
#3	ALDI	71.9	#14	TRADER JOE'S	58.1
#4	TARGET	70.8	#15	COSTCO WHOLESALE	56.2
#5	GIANT EAGLE	69.4	#16	Southeastern Grocers	54.3
#6	WEGMANS	67.1	#17	PUBLIX	48.1
#7	ALBERTSONS COMPANIES	67	#18	WINCO FOODS	47.2
#8	SPROUTS FARMERS MARKET	65.4	#19	H-E-B	46.4
#9	AHOOLDELHAIZE	64.1	#20	PRICE CHOPPER	40.4
#10	MEIJER	62.3	#21	THE SAVE MART COMPANIES	39.2
#11	KROGER	61.4	#22	WAKEFERN FOOD CORP	37.9

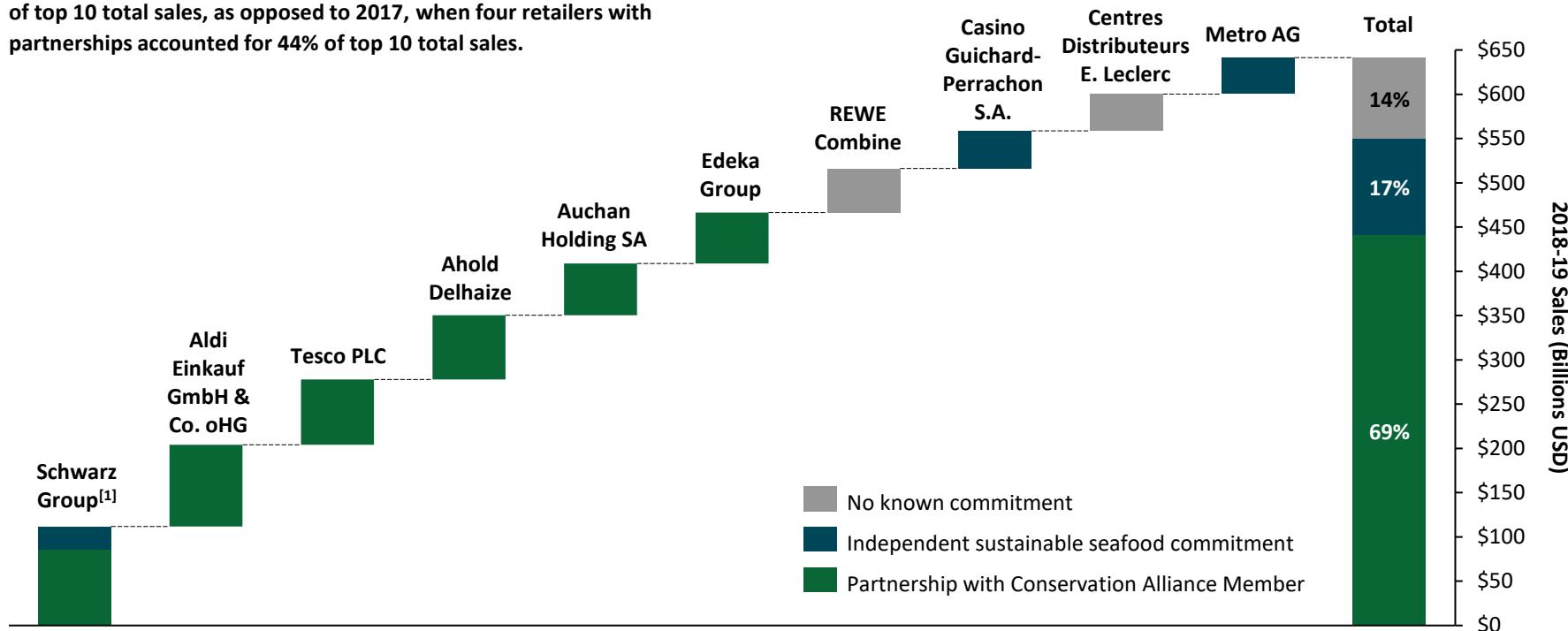
In Canada, the largest retailers have sustainable seafood partnerships with Conservation Alliance NGOs



Note: For additional information on Canadian retailers, SeaChoice's [Seafood Progress](#) monitors the sustainable seafood commitments of Canadian retailers.
 Source: Global Agricultural Information Network, [2018 USDA GAIN Report](#): Canada Retail Sector Overview

In the E.U., the six largest retailers have sustainable seafood partnerships with NGOs, representing a 25% increase in total sales covered by partnerships since 2017

Six E.U. retailers with sustainable seafood partnerships account for 69% of top 10 total sales, as opposed to 2017, when four retailers with partnerships accounted for 44% of top 10 total sales.



Top 10 European Retailers – Total Sales (Billions USD)

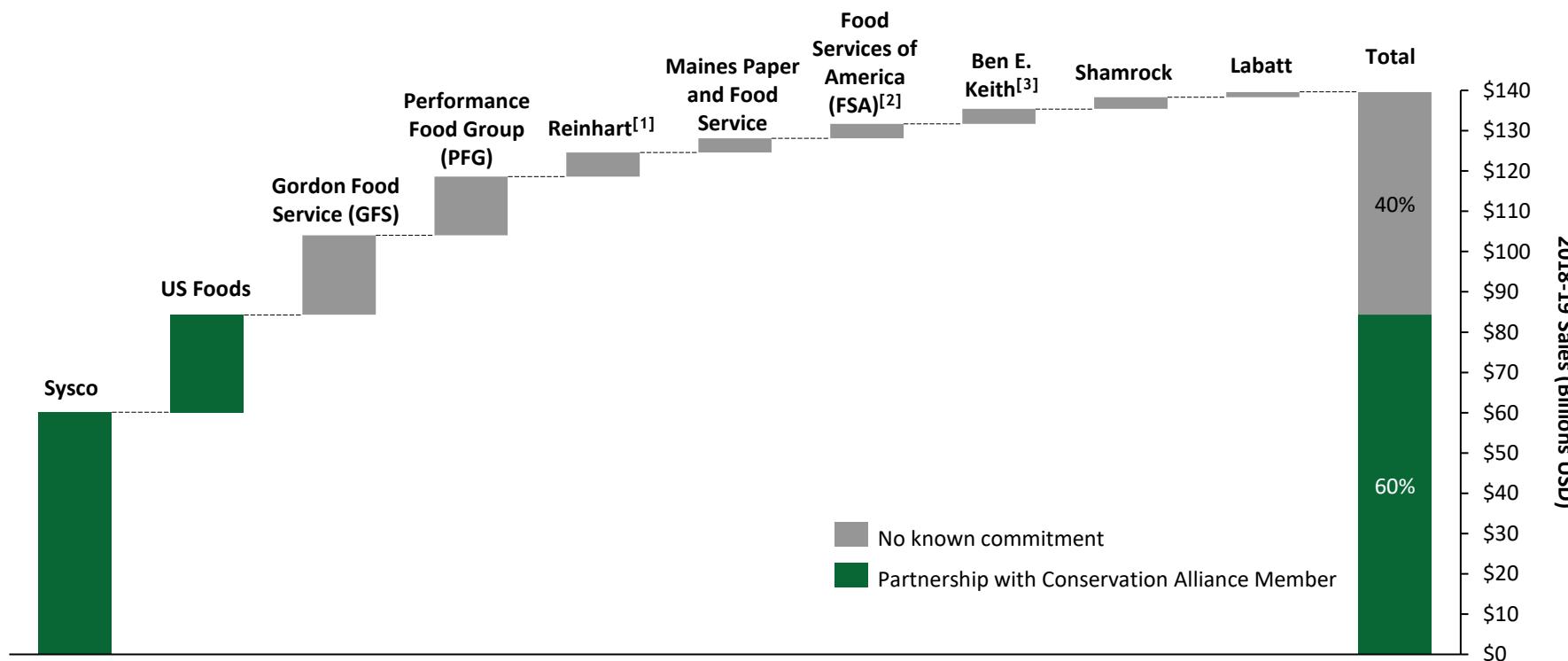
Note: Sales numbers represent total worldwide sales, which may include some stores located outside of Europe

[1] Schwarz group subsidiary Lidl has an NGO partnership and subsidiary Kaufland has an independent sustainable seafood commitment

Source: Deloitte, "Global Powers of Retailing" 2019.

Since 2017, there were no new sustainable seafood commitments in the leading 10 global food distributors

Additionally, there continues to be consolidation among the leading food distributors.



Top 10 Global Food Distributors – Total Sales (Billions USD)

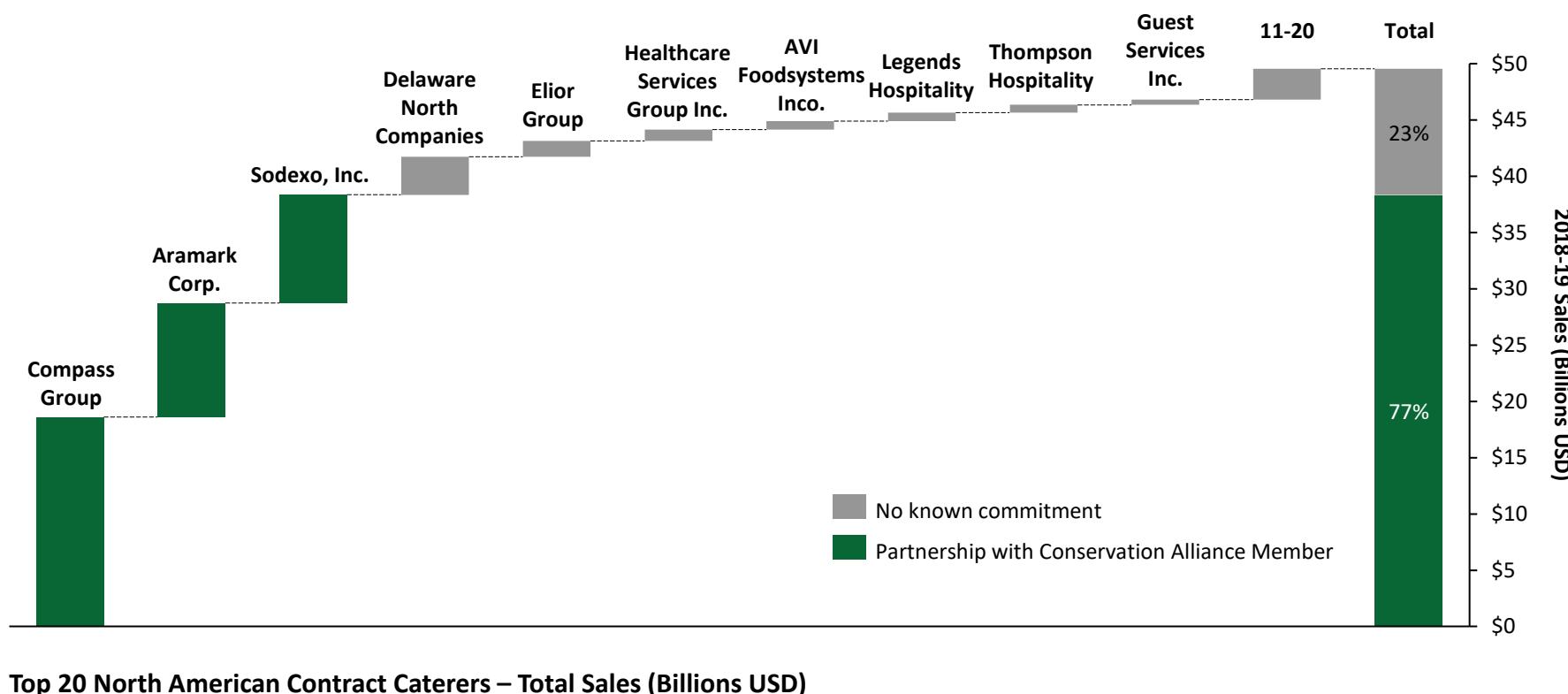
[1] Reinhart was purchased by PFG in 2019

[2] Represents all sales from parent company Services Group of America (SGA) which was purchased by US Foods in 2019

[3] Represents all sales for parent company Ben E. Keith, which includes separate food and beverage divisions

Sources: Food distributor annual financial reports and Forbes.com

Of the top 20 North American contract catering companies, there were no new sustainable seafood commitments made since 2017



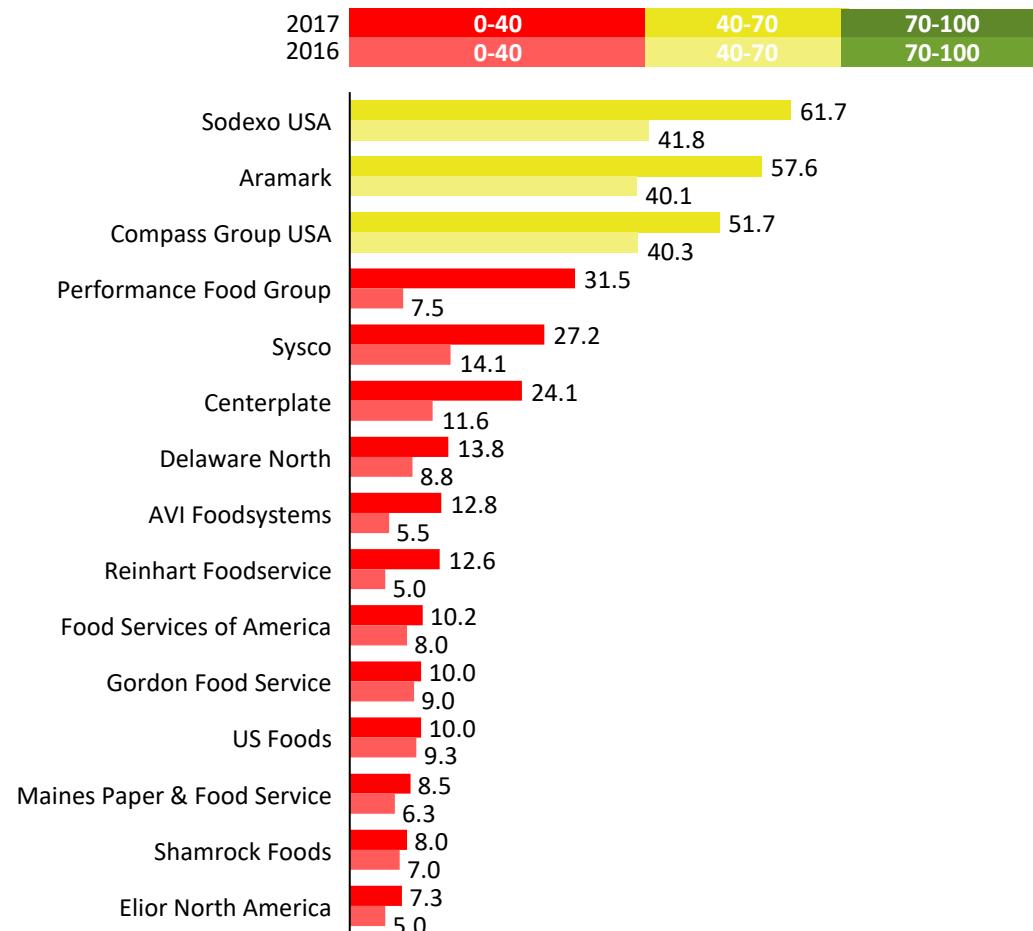
Source: Food-Management.com

In its second year, Greenpeace's Food Service Sustainability Scorecard awards only three U.S. food service companies a passing score

Greenpeace gave most top U.S. food service companies a failing score on their seafood sustainability efforts based on the criteria of policy, sourcing, advocacy, traceability, transparency, and inventory. The U.S. food service industry has annual sales exceeding \$700 billion, representing approximately half of food-away-from-home spending each year.

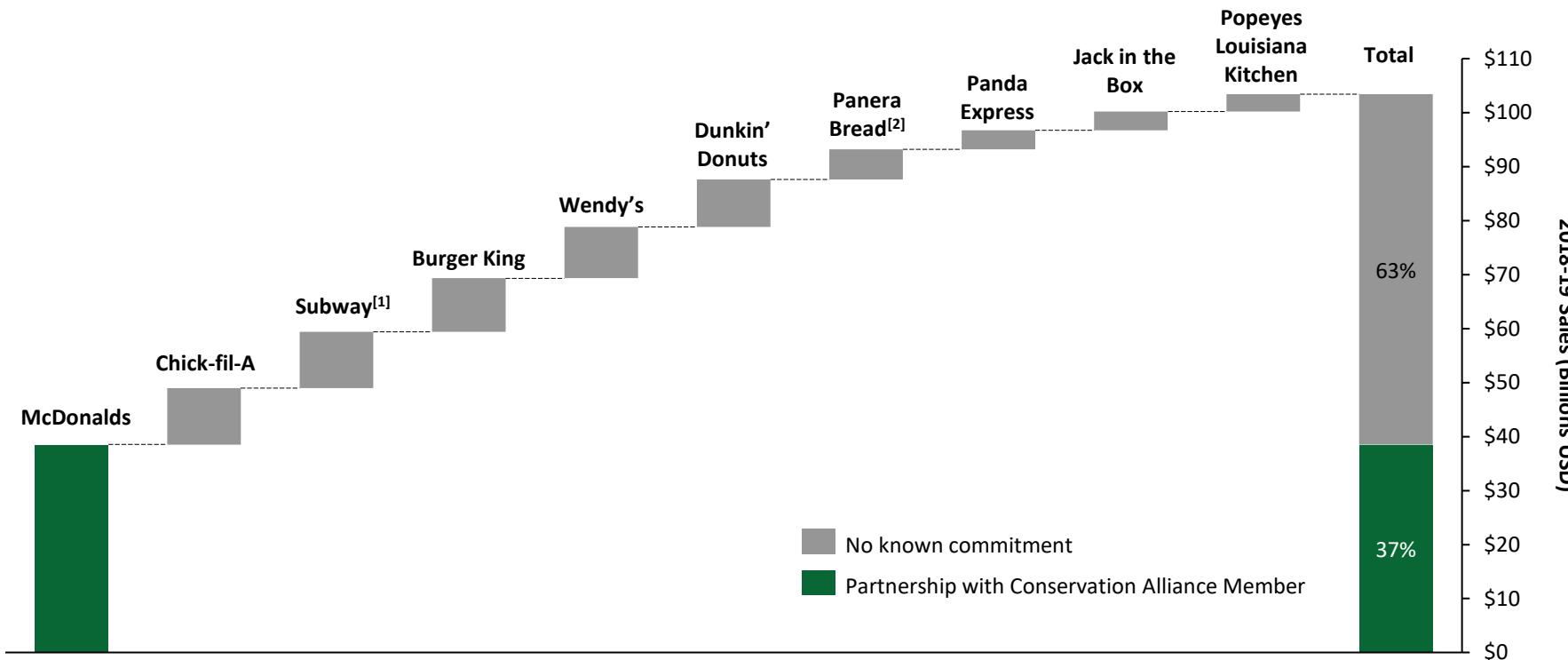
Sodexo, Aramark, and Compass Group continue to lead in seafood sustainability. They are the only three companies with NGO partnerships and the only three companies receiving a passing score on the Food Service Scorecard. They are all at least 20 points ahead of all other U.S. food service companies. All companies scored by Greenpeace have improved their scores since the 2016 report was released.

2017 Food Service Scorecard



Source: Greenpeace, “[Sea of Distress](#),” 2017.

McDonalds continues to be the only major fast food chain with a sustainable seafood NGO partnership



Top 10 U.S. Fast Food Restaurants – Total Sales (Billions USD)

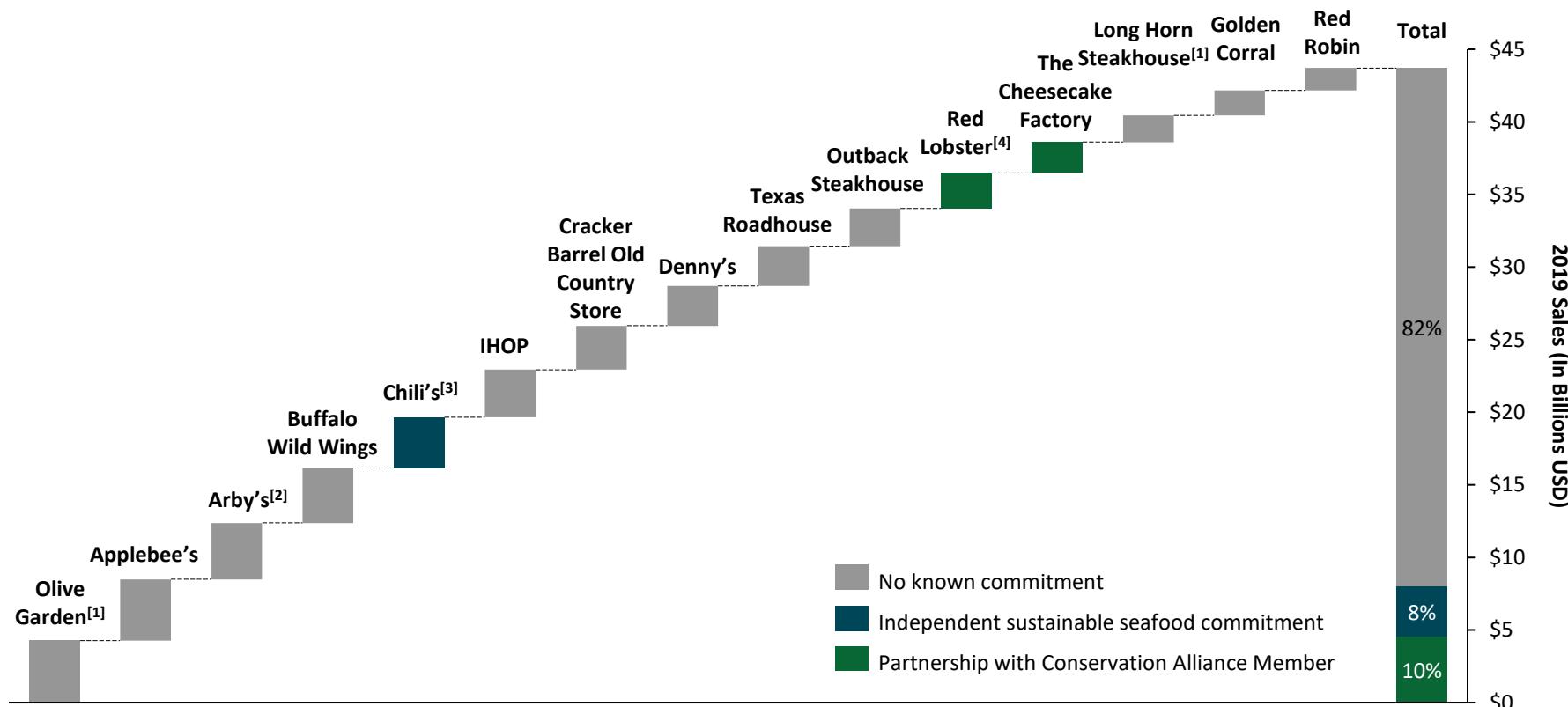
Note: Figures represent global sales

[1] Subway has independently identified long-term goals for their seafood sourcing sustainability

[2] Panera Bread self-identifies as a “fast-casual” restaurant and sources 100% of their seafood from wild-caught sources but has no official seafood commitment policy

Sources: [Nation's Restaurant News](#) (Methodology: filtered for fast food restaurants that sell at least one seafood item); Individual restaurant websites

Red Lobster and The Cheesecake Factory are the only major casual dining restaurants with sustainable seafood NGO partnerships



Top 15 Casual Dining Chains – Total Sales (Billions USD)

[1] Olive Garden and LongHorn Steakhouse are owned by parent company Darden, which formerly held a partnership with the New England Aquarium

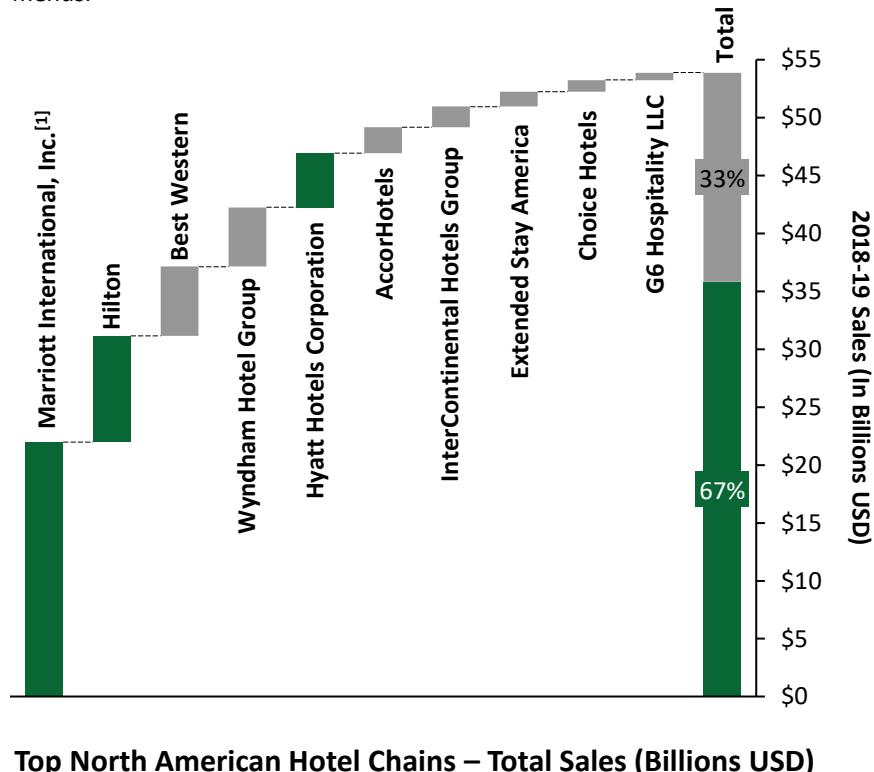
[2] Arby's sources "wild and sustainably-caught" Alaskan pollock

[3] Chili's has an independent sustainable seafood commitment through parent company Brinker International

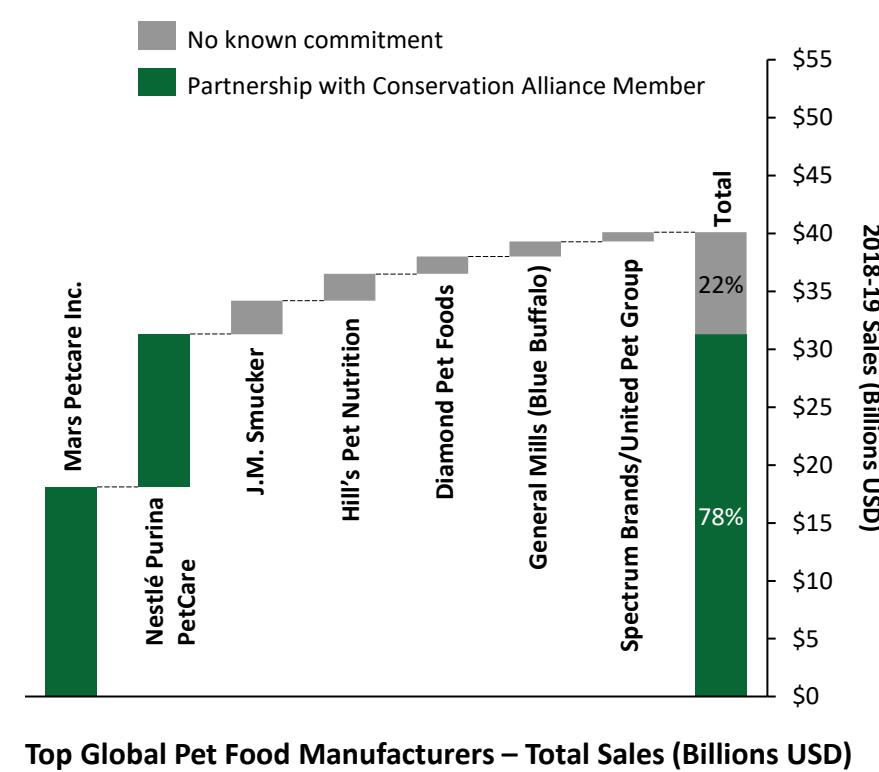
[4] Red Lobster is a subsidiary of parent company Darden but has a separate partnership with WWF and Monterey Bay Aquarium Seafood Watch
Sources: Nation's Restaurant News and individual restaurant websites

The largest North American hotel chain and the first and second largest global pet food manufacturers have made sustainable seafood NGO partnerships

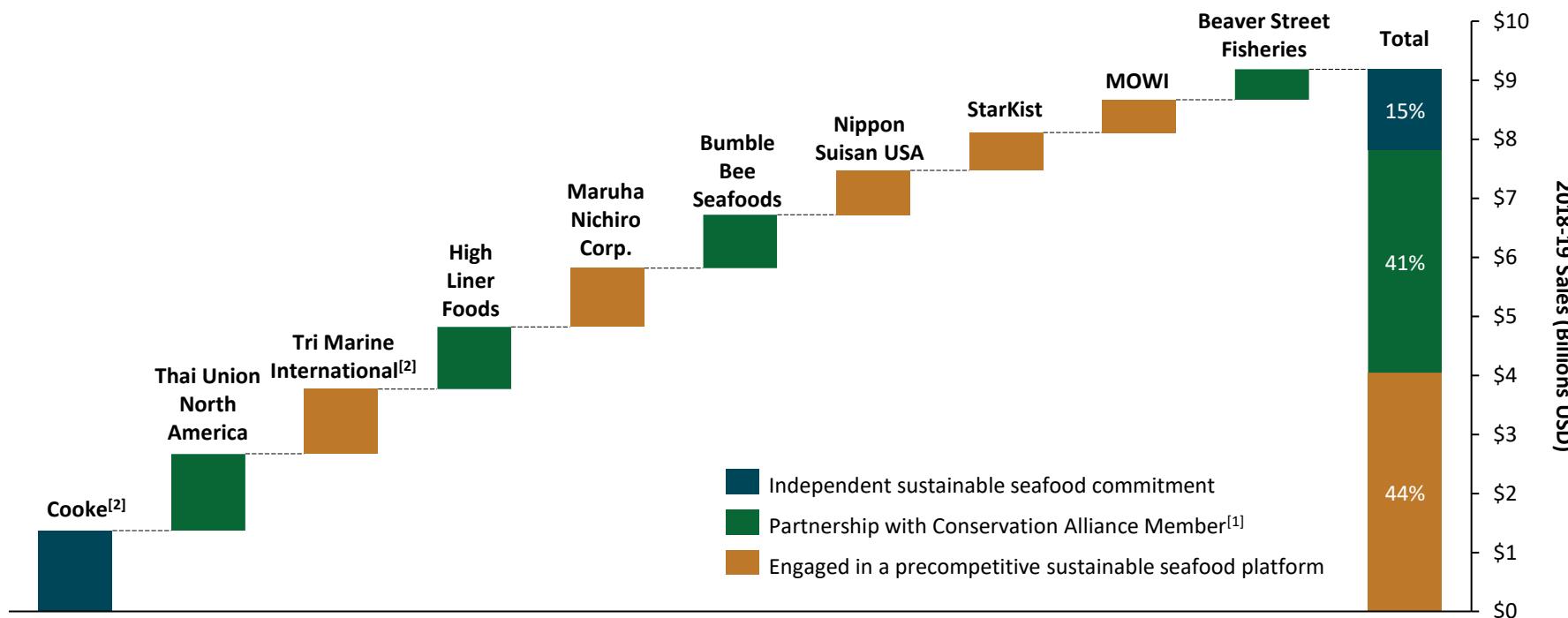
Walt Disney Parks and Resorts, the world's largest amusement park company, has also partnered with SFP to serve sustainably-sourced seafood on their menus.



Sources: Business Chief; PetfoodIndustry.com



The top 10* North American seafood suppliers all engage with at least one precompetitive platform or have an independent seafood sustainability commitment



Top 10 North American Seafood Suppliers – Total Sales (Billions USD)

*The majority of North American seafood companies are privately owned and do not disclose annual revenue, so information may be incomplete

[1] All top 10 seafood suppliers with Conservation Alliance Member partnerships also are engaged in at least one precompetitive seafood sustainability platform

[2] Cooke does not participate in a precompetitive platform identified by the 2018 Seafood Metrics Report Supplement but has a sustainability website and independent commitments.

Sources: CEA, "Seafood Metrics Report Supplement: Industry Engagement Platforms", June 2018; SeafoodSource.

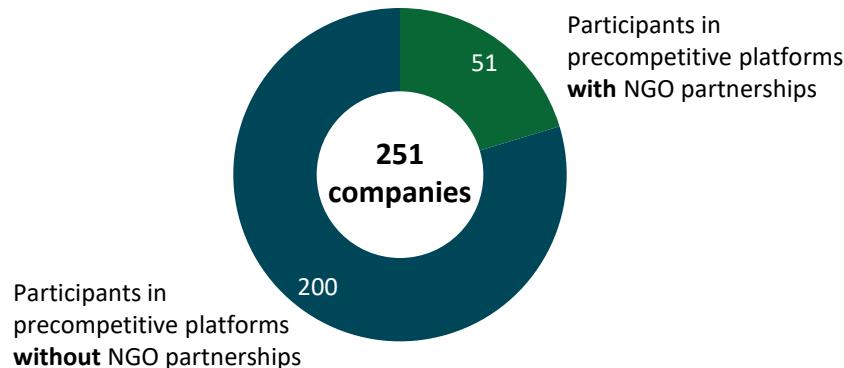
Precompetitive platforms engage over 250 seafood companies in initiatives that focus on different aspects of seafood sustainability

CEA's 2018 scan of 12 precompetitive platforms found that they cover a wide variety of species, including tuna, salmon, shrimp, and crab, as well as cross cutting issues and supply chain sectors. The proliferation of platforms reflect industry leadership in the movement.

Platforms that focus on more than one commodity in issue areas such as overfishing, IUU, human well-being, traceability and transparency, and certification benchmarking:

- Food Service Roundtable
- Global Dialogue on Seafood Traceability
- Global Seafood Sustainability Initiative
- Hong Kong Sustainable Seafood Coalition
- Mexican Seafood Supply Chain Roundtable (SR)
- Sea Pact
- SeaBOS
- Seafood Task Force
- Sustainable Seafood Coalition

Companies engaged in precompetitive platforms in 2018



Platforms that focus on specific commodities

Commodity	Platform
Crab	<ul style="list-style-type: none"> • NFI Crab Council • Russian Far East Coldwater Crab SR • SE Asia Blue Swimming Crab SR
Farmed Salmon	<ul style="list-style-type: none"> • Global Salmon Initiative
Farmed and wild-caught shrimp	<ul style="list-style-type: none"> • Asian Farmed Shrimp SR • Gulf of Mexico Shrimp SR • Seafood Task Force
Mahi	<ul style="list-style-type: none"> • Global Mahi SR
Reduction fisheries	<ul style="list-style-type: none"> • Asian Reduction Fisheries SR • Latin American Reduction Fisheries SR
Snapper / grouper	<ul style="list-style-type: none"> • Indonesia Snapper and Grouper SR
Squid / octopus	<ul style="list-style-type: none"> • Global Octopus SR • Global Squid SR
Tuna	<ul style="list-style-type: none"> • Global Fresh and Frozen Tuna SR • Global Tuna Alliance • International Seafood Sustainability Foundation • Seafood Task Force
Whitefish	<ul style="list-style-type: none"> • NW Atlantic Cod SR • Russian Far East Whitefish SR • South American Whitefish SR

Platform profile: Sea Pact's member companies have made over \$550,000 in grants to sustainable seafood projects globally

Sea Pact, established in 2013, is a pre-competitive collaboration of like-minded North American seafood companies driving sustainable fishing and aquaculture practices through a variety of approaches including grant-making, leadership, and direct engagement on key issues. The 11 member companies combined purchase over 225 million pounds of seafood annually at a value of \$1.6 billion. Sea Pact is supported by three NGOs: FishWise, Ocean Outcomes, and Sustainable Fisheries Partnership.

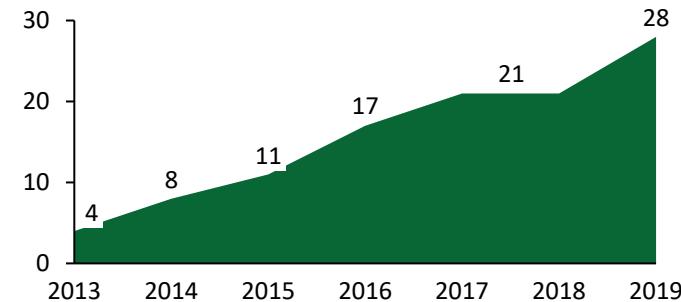
The group has made 28 grants to 22 projects in 13 countries with over \$550,000 in direct support, and over \$1 million in additional funds generated. Sea Pact members fund projects ranging from a crew-based observer program in the Sri Lanka longline tuna and swordfish FIP to development of a rapid assessment protocol for socially responsible seafood.

Sea Pact member companies

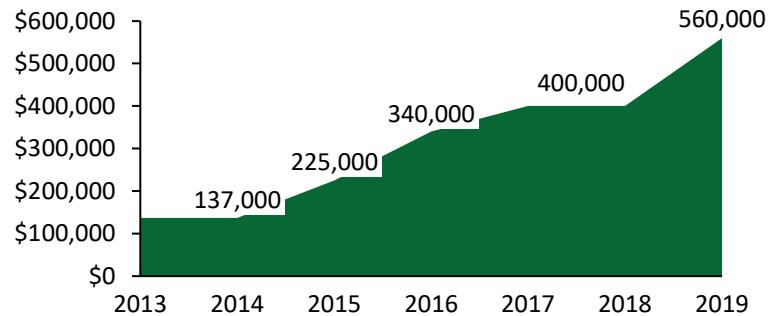


Source: Communication with Rob Johnson, Sea Pact. For more information on the types of projects funded, see <https://www.seapact.org/facts.html>

Cumulative grants awarded



Cumulative funds awarded



Platform profile: Sustainable Seafood Coalition membership increased over the last two years, showing greater representation of U.K. food service industry

The Sustainable Seafood Coalition (SSC), a partnership between U.K. businesses that formed in 2011, works at all segments of the seafood supply chain to improve sustainability. Its 35 seafood business members commit to SSC Codes of Conduct on Environmental Claims and Environmentally Responsible Fish and Seafood Sourcing.

SSC has recently added an SSC Steering Group and has been working to develop new guidance for members on credible advocacy initiatives, as well as produce a risk assessment template which guides members in listing a new product or conducting assessments of a source.

Members:

- Membership has risen from 24 in 2017 to 40 in May 2020. Members include 35 seafood businesses (up from 19 in 2017) and five representative organizations (e.g., British Retail Consortium).
- Half of all members are in the food service sector, while the other half are in retail. SSC has noted a steady increase in interest in seafood sustainability from the foodservice industry.
- Eight out of the 10 largest supermarkets in the U.K. are members.



Source: Communication with Oliver Tanqueray, ClientEarth.

Japan has emerging market demand for sustainable seafood; cultivating this demand is a priority for Seafood Legacy

Over the last decade, Japan has emerged as the first Asian market to embrace the development of a sustainable seafood movement domestically. Seafood Legacy Foundation has led efforts to develop culturally relevant corporate commitments across market segments and stakeholders (e.g., government, industry).

Category	Progress
Retailers	<p>The largest Japanese retailers, Aeon and Seven & i Holdings, and the major home delivery, JCCU (Japanese Consumers' Co-operative Union), all have time-bound procurement policies on sustainable seafood. Many other major retailers have also increased their procurement of sustainable seafood, including certified products and products under fisheries and aquaculture improvement projects.¹</p> <p>At the Tokyo Sustainable Seafood Symposium 2019, MSC announced that the MSC certified products distributed in the Japanese market have increased six times (in volume) in the previous two years.²</p>
Corporate Cafeterias	<p>Japan-based global companies, including Panasonic and Hitachi, started sourcing sustainable seafood at their cafeteria in 2018. The rapid increase in demand for sustainable seafood has made major catering companies, such as Seiyo Foods (Compass group) and Aim Services (Aramark group), procure more sustainable seafood products.³</p>
Fisheries Companies	<p>Maruha Nichiro and Nissui, Japan-based global fisheries companies, have joined the global platform SeaBOS and updated their new sustainable seafood policies.⁴</p>
Business Initiatives	<p>The dramatic escalation of the business initiatives in Japan has been highlighted at the movement-flagship annual business event, the Tokyo Sustainable Seafood Symposium (TSSS), which in 2019 became one of the largest sustainable seafood-focused events in Asia (having over 1000 participants and over 100 speakers).⁵</p>
Revised National Fisheries Law	<p>In 2018, The Japanese government celebrated the most significant reform of its fisheries laws in 70 years, which redefines the fundamental system of fishing regulations and resource assessment with the goal of achieving proper management of fishery resources and the resurgence of the fishing industry. In addition, in 2019, the government officially started working on establishing a catch documentation scheme and import control rules to eliminate IUU-related seafood products from the Japanese market.</p>
Responsibility	<p>In October 2019, 80% of the seafood-related business representatives answered "catch documentation scheme is needed" at the questionnaires conducted by a major fisheries daily newspaper.⁶</p>

Sources: 1. [Aeon website](#); 2. [Sustainable Seafood Now](#); 3. [BusinessWire](#); 4. [Maruha Nichiro website](#); 5. [Sustainable Seafood Now](#); 6. [Suikei website](#)
Communication with Wakao Hanaoka, Seafood Legacy Foundation

CONDITIONS FOR BUSINESS CHANGE

Key takeaways

- Seafood-specific media coverage of key fisheries and aquaculture sustainability remains constant since 2015, while Seafood Watch App users grow to over two million.
- The 2018 and 2019 SeaWeb Seafood Summits saw fewer attendees than previous years. The Summit will not take place in 2020.
- Seafood mislabeling and fraud continues to be a health, economic, and conservation concern. Oceana's 2018 tests of seafood samples found 20% to be mislabeled (particularly sea bass and snapper), an improvement from a previous Oceana study that found one-third to be mislabeled.
- 22 seafood businesses across North America and Europe voluntarily disclosure their seafood sourcing through the Ocean Disclosure Project, which hopes to grow companies participating and expand profile scopes.
- Traceability and transparency initiatives, such as Global Fishing Watch, seek to combat IUU fishing in countries with weak enforcement, such as China, Taiwan, Indonesia, Russia.
- At least five impact investment vehicles have launched since 2016.

M E T R I C S I N C L U D E D :

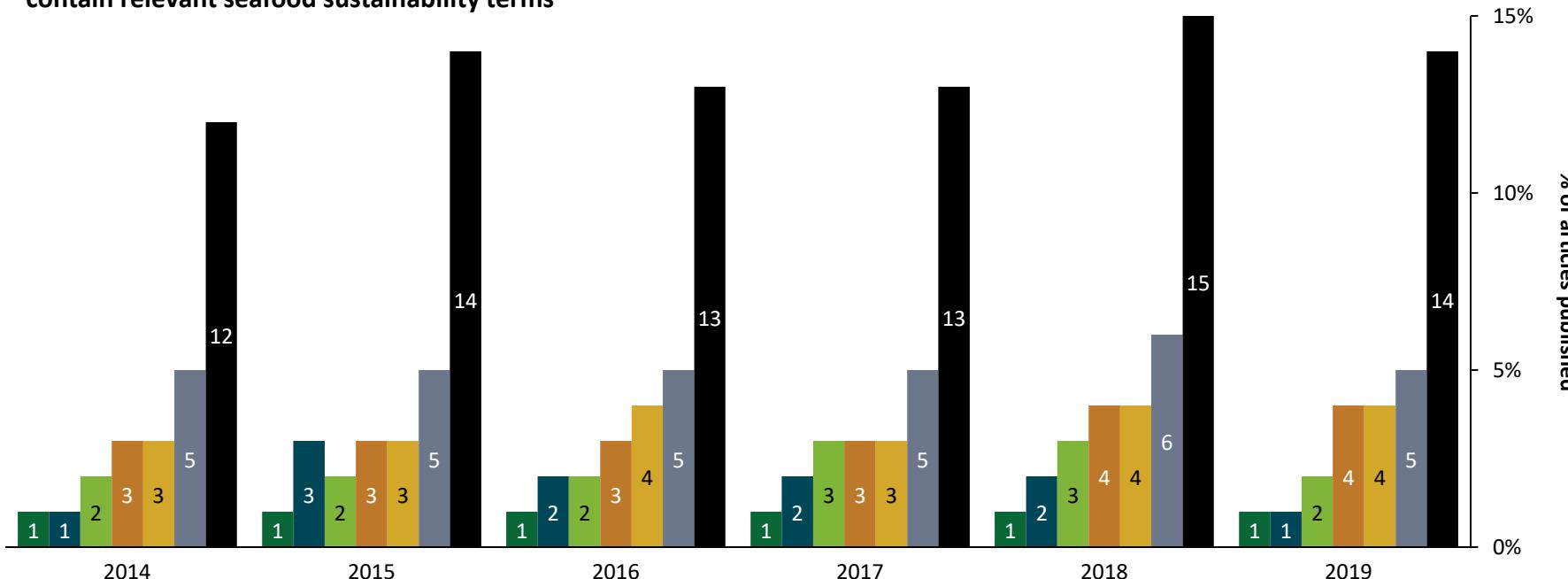
- Media penetration
- Industry event attendance
- Fraud and mislabeling
- Traceability and transparency
- Enabling businesses and initiatives
- Ocean-focused impact investors

Online coverage of seafood sustainability issues has remained constant on IntraFish.com over the last half decade

The website IntraFish.com provides in-depth coverage of the seafood landscape. The percent of articles being published on IntraFish.com that mention key sustainability-related topics has remained relatively constant over the last five years.

- █ FIP
- █ IUU
- █ Sustainable Seafood
- █ Traceability
- █ Sustainable Aquaculture
- █ MSC
- █ All articles with at least one key term

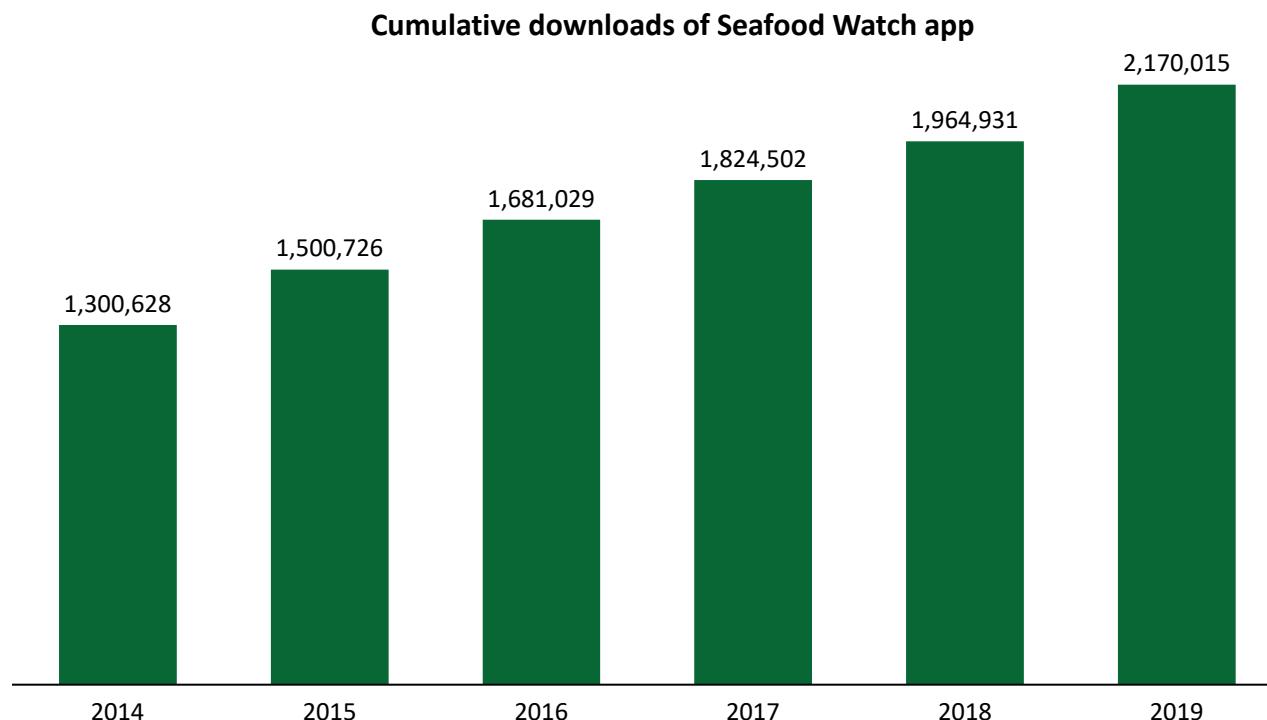
Percent of articles published on IntraFish.com that contain relevant seafood sustainability terms



Source: IntraFish.com

Downloads of the Seafood Watch phone application continue to increase, surpassing 2.1 million

In 2004, Monterey Bay Aquarium began distributing Seafood Watch cards. While the cards are still in use, Seafood Watch now encourages businesses and partner institutions, the primary distributors of the guide, to promote the app through signage and other materials. App use continues to rise, with over 200,000 new downloads of the app in 2019. Outside of North America and primarily in the E.U., WWF has created 25 country-specific seafood guides for consumers that are also available as phone applications.



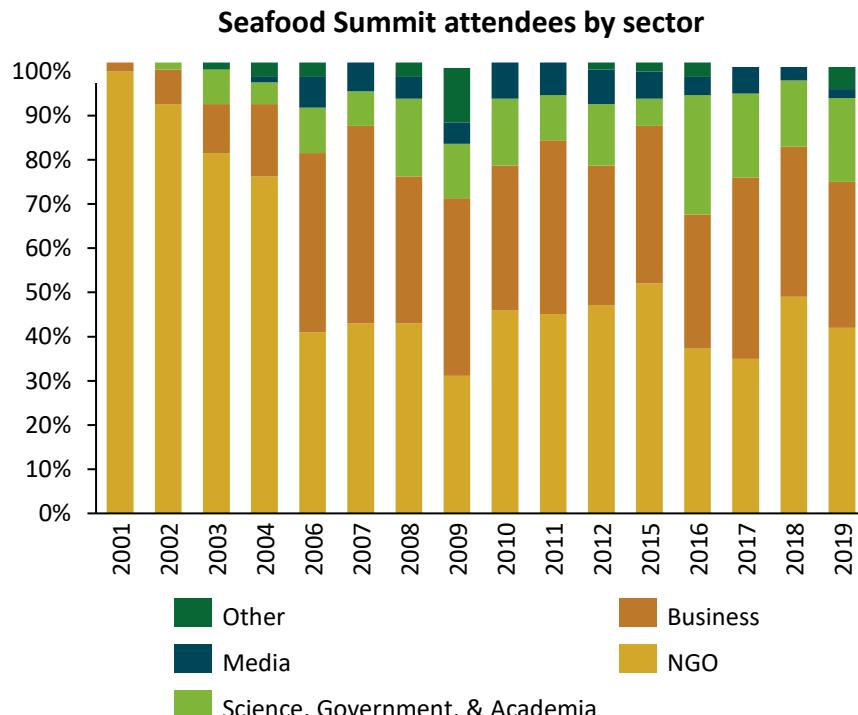
Sources: Communication with Erin Hudson, Monterey Bay Aquarium; [WWF Sustainable Seafood Guides](#)

Seafood Summit attendance declined in 2018 and 2019; summits held in North America are better attended but attract fewer international attendees

Since the 2017 Seafood Summit in Seattle, total attendance numbers have declined, stabilizing at around 350 participants in both 2018 and 2019. Before COVID-19 shifted conference dates around the world, Diversified Communications decided to postpone the Seafood Summit in 2020.

Trends observed over the last 11 years include:

- Summits held outside of North America averaged much higher numbers of non-U.S. and Canada attendees.
- Strongest attendance for the summit was from 2009-2015, peaking at 708 attendees in 2011. In 2016-2019, attendance has averaged 69% of what it was over the four years prior.
- Summits held in North America have averaged 135% higher attendance overall.



Summit Year and Location	Total Attendees	% Non-U.S./Canada
2008 Barcelona	350	62%
2009 San Diego	475	29%
2010 Paris	641	72%
2011 Vancouver	708	19%
2012 Hong Kong	503	62%
2015 New Orleans	514	17%
2016 Malta	342	58%
2017 Seattle	596	25%
2018 Barcelona	349	58%
2019 Bangkok	350	56%

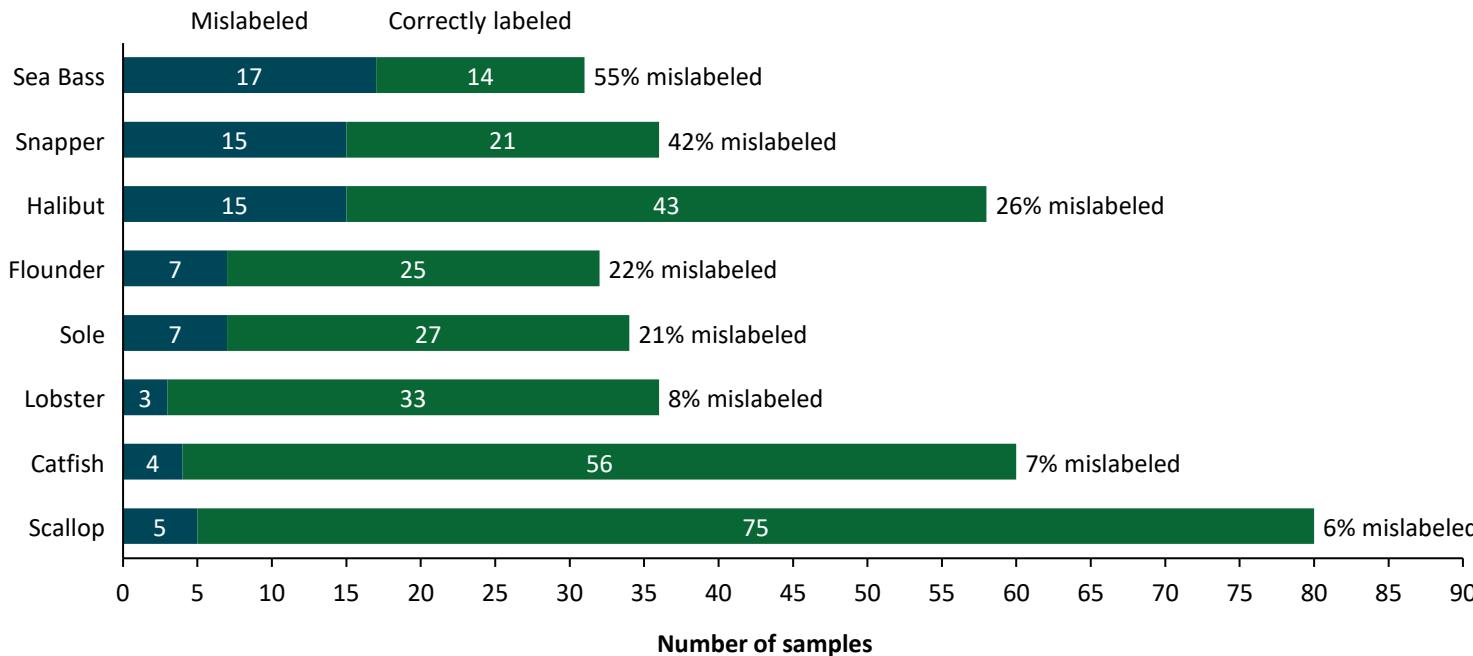
Source: Communication with Ned Daly, Diversified Communications.

Oceana found 20% of tested fish in the U.S. to be mislabeled; fraud proves to be a source of health, economic, and conservation risks

Oceana has DNA-tested over 1,500 seafood samples for fraud since 2010. In its 2018 study, Oceana found that roughly 20% of samples tested were mislabeled. While using a different methodology, in its 2010-2012 research, Oceana found that 33% of seafood samples were mislabeled nationwide.

The most recent findings from Oceana (collected between March and August 2018) showed that the most sampled fishes had the highest rates of mislabeling, one out of three establishments sold one item of mislabeled seafood, and that seafood was more frequently mislabeled at restaurants and smaller markets than larger chain grocery stores. Mislabeling can occur as imported fish masquerading as local catch or as depleted fish species sold as more sustainable species.

Mislabeling levels among most sampled seafood types in Oceana 2018 study



Sources: Oceana, "Casting a Wider Net: More Action Needed to Stop Seafood Fraud in the United States," 2019; Oceana, "Oceana Study Reveals Seafood Fraud Nationwide," 2012.

The Ocean Disclosure Project grows to 27 companies in seven countries voluntarily disclosing their seafood sourcing

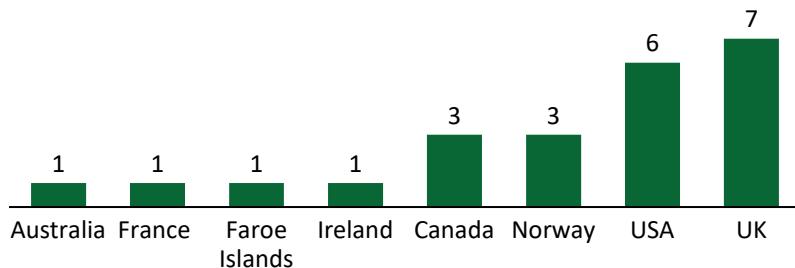
The Ocean Disclosure Project (ODP), launched in 2015¹ by Sustainable Fisheries Partnership, provides a reporting framework for seafood companies to voluntarily disclosure their wild-caught and farmed seafood sourcing alongside information on the environmental performance of each source.

ODP is transitioning to a fee-based system for participants in 2020 to support the costs of developing disclosures and maintaining the website. Fees are based on company revenue and number of sources in a profile. Profiles are updated annually and reflect the participating company's sourcing from the previous year. 15 of the exiting 27 participants are grocery retailers, while the balance of participation includes seafood distributors, processors, and feed producers.

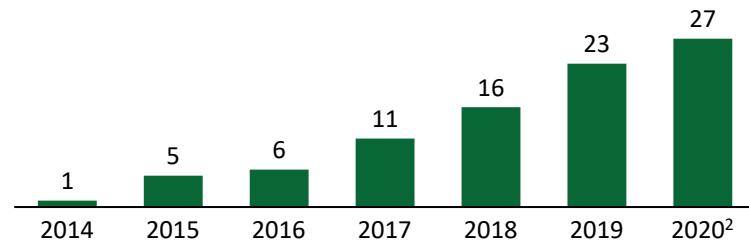
ODP priorities include:

- Increasing the number of companies disclosing both wild-caught and farmed sources.
- Encouraging more food-service companies to disclose in coming years.
- Expanding the scope of profiles for returning ODP participants, including increasing the percentage of companies disclosing vessel data.
- Documenting evidence of actions to improve unsustainable fisheries and fish farming practices that have been identified through the ODP.

Countries with existing participants



Number of participants over time



1. ODP's website launched in 2017.

2. Data as of May 2020.

Sources: Information from OceanDisclosureProject.org and personal communication with Tania Woodcock, Project Manager of ODP

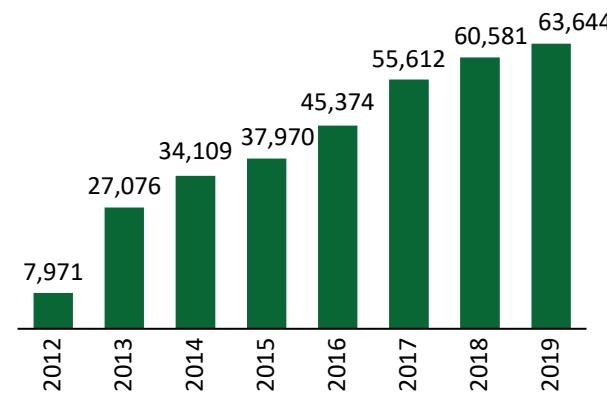
The number of active fishing vessels broadcasting Automatic Identification Systems (AIS) on Global Fishing Watch continues to grow, including distant water fleets

Global Fishing Watch (GFW) is an international non-profit organization dedicated to advancing ocean sustainability through increased transparency in fisheries and scientific research, supporting governments to more effectively address threats to marine resources, security, and coastal communities.

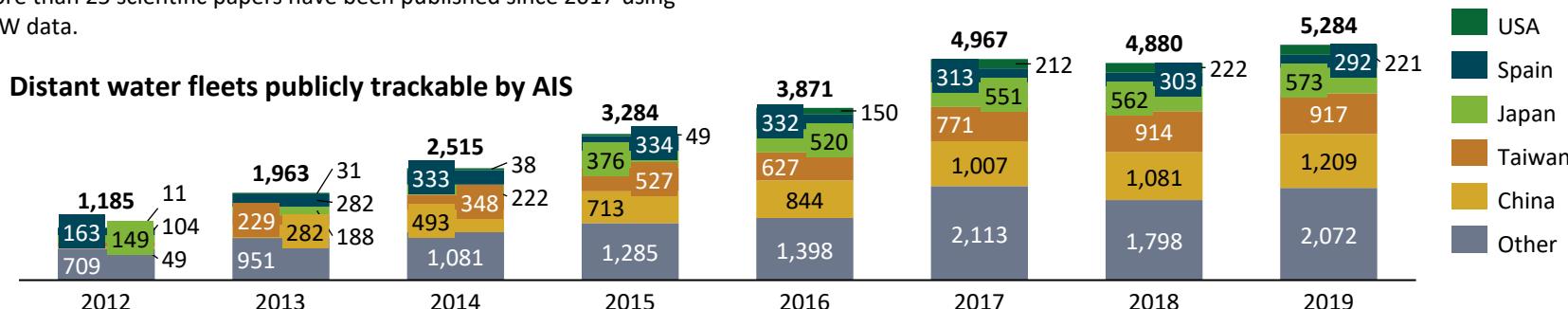
Progress as of October 2019:

- GFW public map platform tracks approximately 65,000 of the world's largest fishing vessels.
- Three countries (Indonesia, Peru, and Chile) are publishing their vessel tracking (VMS) data to GFW's map, and three other countries (Panama, Costa Rica, and Namibia) have made public commitments and/or signed MoUs to also share data.
- More than 40,000 people are registered to use the GFW public map and data, which are publicly available and free.
- GFW has established partnerships with more than 10 leading research institutions and agencies .
- More than 25 scientific papers have been published since 2017 using GFW data.

Active fishing vessels broadcasting AIS



Distant water fleets publicly trackable by AIS



Note: The growth in trackable DWF is likely due to increased AIS usage and coverage over time. GFW's AIS coverage has increased over time and improved considerably in 2017 when a new data provider was added, and the size of the DWF seems to be relatively stable since 2017.

Source: Communication with David Kroodsma, Global Fishing Watch

Global Fishing Watch highlights the global impact on fisheries

The ability to use AIS tracking data has vastly improved our understanding of the footprint of global fisheries.

Produced using Global Fishing Watch AIS data, this map shows the connections between distant water fishing nations and the EEZs of the countries they fish. Lines connect flag states (blue) fishing in foreign EEZs (red). Line thickness represents total fishing hours, and the circle size represents the number of distinct foreign vessels.

Hotspots can be observed in western Africa, the Indian Ocean, and the western and central Pacific.

Global network of distant water fishing, 2003-2016



Source: Cabral, Reniel B., Juan Mayorga, Michaela Clemence, John Lynham, Sonny Koeshendrajana, Umi Muawanah, Duto Nugroho, et al. "Rapid and Lasting Gains from Solving Illegal Fishing." *Nature Ecology & Evolution* 2, no. 4 (April 2018): 650–58. <https://doi.org/10.1038/s41559-018-0499-1>.

Other vessel tracking systems also seek to address illegal, unreported and unregulated fishing



- Pelagic Data Systems (PDS), founded in 2014, designed and developed an ultra-light solar-powered vessel tracking systems (VTS) for small-scale fisheries to track fleets, monitor activities, and provide data analysis, without requiring complex satellite-based systems used on large fishing fleets.
- The VTS automatically self activates and connects to the PDS network once installed and uploads worldwide automatically.
- PDS provides monitoring and analysis to support compliance of protected areas, fisheries management, and supply chain insights.
- Launched in 2018, OceanMind began as a collaboration between the Satellite Applications Catapult and The Pew Charitable Trusts. Initially launched to develop technology fusing satellite data and artificial intelligence to detect IUU fishing, it soon developed into a suite of services to help governments and the seafood supply chain to understand the compliance of fishing activities and support enforcement.
- OceanMind works with partners globally, such as the U.K. Government, the Royal Thai Government, the Seafood Task Force, The Pew Charitable Trusts, Conservation International, and Humanity United.
- Conceived and launched by Microsoft Co-founder Paul G. Allen in 2017, Skylight aims to improve maritime enforcement and combat IUU fishing.
- Skylight provides maritime intelligence software and service solutions for identifying suspicious vessel behaviors and “dark vessel” activity. Skylight utilizes vessel metadata, satellite-based analytics, and machine learning to enable efficient and intelligence-driven resource allocation and enforcement operations to provide real-time alerting and customized monitoring services.

Sources: Organization websites.

The IUU Fishing Index was launched in 2019 to estimate vulnerability to IUU at the country level

Worst-performing countries by indicator group

The IUU Fishing Index benchmarks countries' vulnerability, prevalence and response to IUU fishing, based on 40 indicators. Scores are provided at country, regional, and ocean basin levels, and can be filtered by indicator.

The table to the right highlights the worst-performing countries for different combinations of indicators related to state responsibilities and indicator types. China, Taiwan, Indonesia, Russia, and Cambodia are all countries with the lowest overall scores for different indicators.

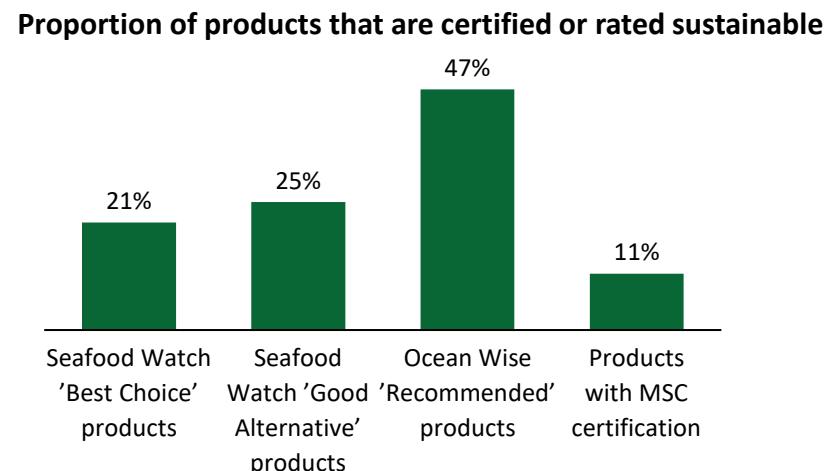
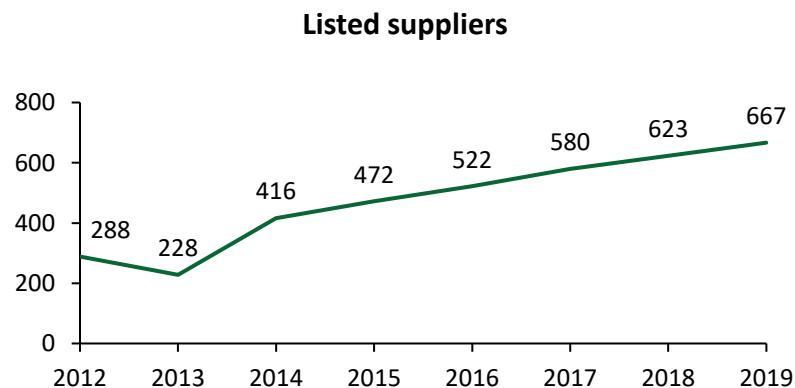
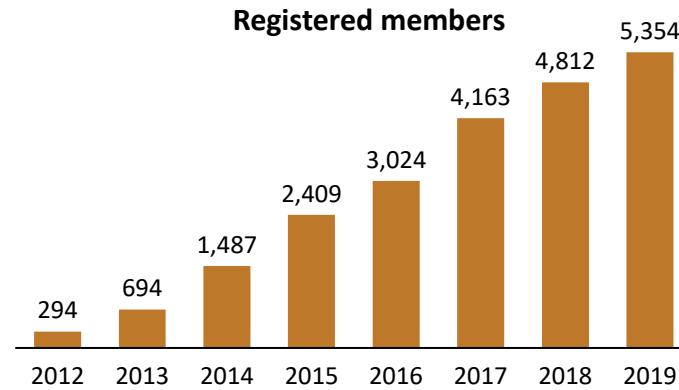
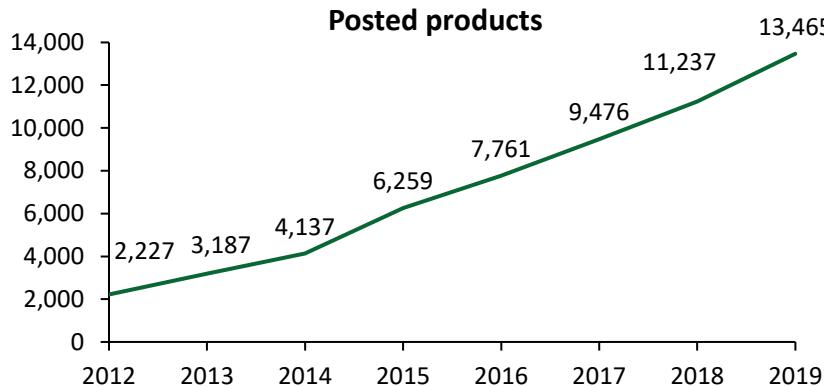
		Type			
		Vulnerability	Prevalence	Response	Overall
Responsibilities	Coastal	<ul style="list-style-type: none"> • Japan • Kiribati • Seychelles 	<ul style="list-style-type: none"> • Ecuador • Philippines • Sierra Leone <p>(+ 3 others)</p>	<ul style="list-style-type: none"> • Timor-Leste • Cambodia • Cameroon <p>(+ 6 others)</p>	<ul style="list-style-type: none"> • Cambodia • Somalia • Vietnam
	Flag	<ul style="list-style-type: none"> • China • France • Japan <p>(+ 4 others)</p>	<ul style="list-style-type: none"> • China • Taiwan • Panama 	<ul style="list-style-type: none"> • Singapore • China • Libya/Russia 	<ul style="list-style-type: none"> • China • Taiwan • Panama
	Port	<ul style="list-style-type: none"> • Canada • China • France <p>(+ 9 others)</p>	<ul style="list-style-type: none"> • China • Taiwan • Vietnam 	<ul style="list-style-type: none"> • Bahrain • Benin • Brunei <p>(+ 19 others)</p>	<ul style="list-style-type: none"> • China • Russia • Cambodia
	General	<ul style="list-style-type: none"> • India • Vietnam • Indonesia 	<ul style="list-style-type: none"> • Thailand • Vietnam • Mexico 	<ul style="list-style-type: none"> • Singapore • Grenada • Yemen 	<ul style="list-style-type: none"> • Viet Nam • Comoros • Cambodia
	Overall	<ul style="list-style-type: none"> • China • Japan • Russia 	<ul style="list-style-type: none"> • China • Taiwan • Vietnam 	<ul style="list-style-type: none"> • Singapore • Cambodia • Yemen 	<ul style="list-style-type: none"> • China • Taiwan • Cambodia

Note: Countries with the same scores in rankings are listed alphabetically. Where more countries than shown in the table have the same score, the number of additional countries is provided in parentheses.

Source: Macfaden, G., Hosch, G., Kaysser, N. and Tagziria, L., 2019. The IUU Fishing Index, 2019. Poseidon Aquatic Resource Management Limited and the Global Initiative Against Transnational Organized Crime.

FishChoice member registration has almost doubled since 2016; over 57% of listed products are MSC certified or Seafood Watch yellow or green rated

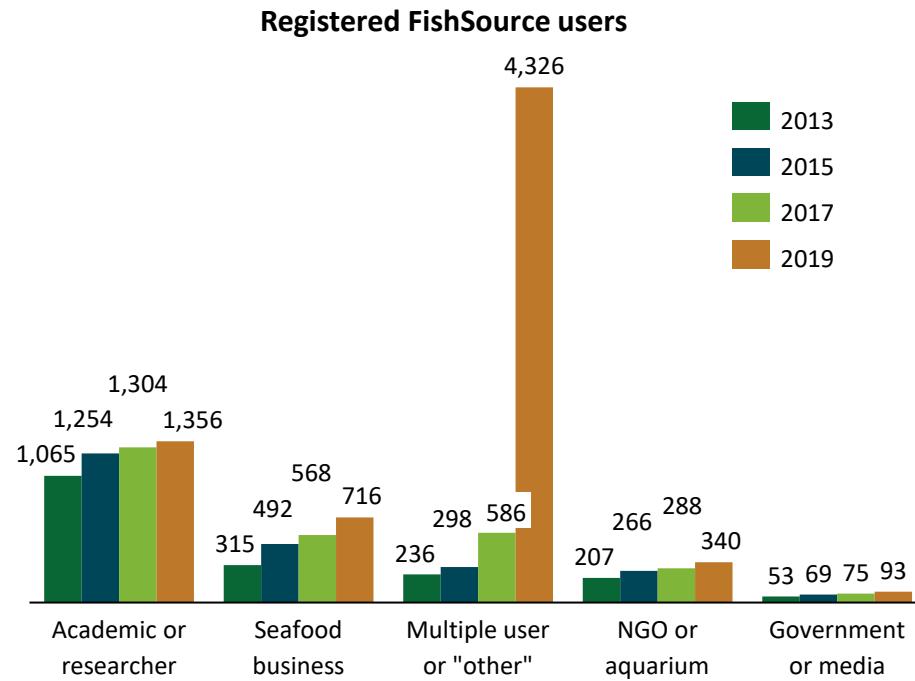
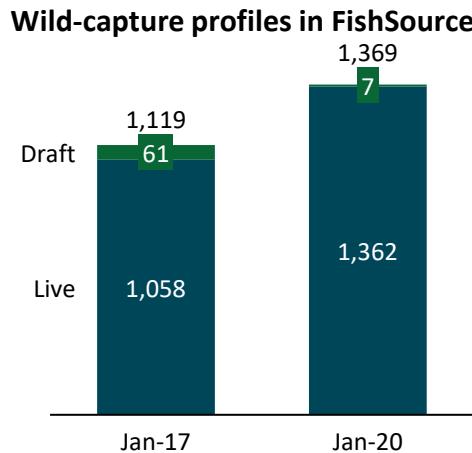
FishChoice provides a seafood directory that highlights sustainably produced commodities and products, making it easier for those working within the seafood industry to find, procure, and sell more responsible products. The number of registered users, listed products, and listed suppliers continues to grow rapidly.



Source: Communication with Richard Boot, FishChoice.

FishSource, a database monitoring the status and environmental performance of fisheries, has over 6,800 registered users and over 1,300 wild-capture profiles

Since revamping FishSource profiles in 2016, 1,369 profiles (defined as a single stock, and each containing multiple fisheries, defined as a fishing gear operated by a flag country within a management unit) are listed on the site. FishSource continues to add users from other sectors and expand and verify the fishery information in its database. Total registered users as of January 2020 were 6,831. FishSource now also has profiles for 15 aquaculture units, covering 59 provinces/states across four species groups.



Note: Prior to 2017, FishSource profiles could describe either stocks or fisheries, including MSC (certified or under certification) fisheries and FIPs. Now a profile is defined around a single stock, and can include multiple nested fisheries, defined more strictly as a single gear used by a single flag country, within a single management unit, on a single stock; and MSC fisheries and FIPs are associated with the respective fisheries. Additionally, FishSource profiles are not all fully developed. The team researches the stock and management structure and develops “shell profiles”, as they receive requests from retailer partners. Then the profiles enter a prioritization queue and are developed as capacity allows. Currently around 40% of profiles have corresponding FishSource scores.

Note: Since the new version of FishSource launched in late 2016 the field on organization type was not mandatory to complete, although FishSource recently made a change to encourage users to add this information to their user profile.

Source: Communication with Susana Segurado, Sustainable Fisheries Partnership.

At least five private impact investment vehicles seek investments that advance sustainable fisheries or the wider blue economy

Since 2016, at least five private investment vehicles have launched with strategies relating to healthier oceans, sustainable fisheries, and their associated economies. As return-seeking investors, these funds look to invest in private, for-profit enterprises that can generate a return on investment while advancing conservation-related outcomes. The consensus is that impact investments, especially in less developed countries where fisheries and ocean economies are in greatest need of

reform, have been difficult to make so far. Funds that are primarily focused on sustainable fisheries tend to have made fewer investments than funds with broader mandates (e.g., blue economy and ocean health).

We are aware of the following investment vehicles: Pescador Holdings, The Meloy Fund, Conservation International Ventures, Althelia Sustainable Ocean Fund, and AiiM Partners Fund.

	Pescador	Meloy	CI Ventures	Althelia SOF	AiiM
Launch year	2017	2017	2018	2018	2019
Current AUM (Target AUM)		\$22M (\$17M)	\$14M (\$30M)	\$92M in commitments (\$100M)	\$30M (\$100M)
Investment type	Equity	Debt and equity	Venture debt		Equity only
Target investment size		\$500K - \$4M	Up to \$500K	Est. \$5M - \$7M (based on 15-20 deals)	\$250K - \$2M
Geographic focus	Global	The Philippines and Indonesia	Global	LatAm & Caribbean, Africa, Asia & Pacific	Global, but U.S. centric
Ocean investments made to date	1 seafood-related	3 seafood-related	2 seafood-related		10 ocean-related (5 seafood-related)
Method for tracking ocean impact		Internal collection, proprietary metrics	Internal collection, proprietary metrics	Partnered with EDF and CI	Internal collection, proprietary metrics

Sources: Personal communication with Jan Yoshioka (CI Ventures), Shally Shanker (AiiM Partners), and Mauricio Child (Meloy).

Althelia unavailable for personal communication, information gathered from althelia.com and [Natixis Investment Managers](#)

Pescador information gathered from encouragecapital.com, [ImpactAlpha](#)

Three investors offer insights into successes and challenges associated with investing in sustainable fisheries and a healthier ocean

Success stories

“One of the businesses that the Meloy Fund has supported is a local octopus processing company, which has transformed the way it identifies, obtains and accounts for its raw materials. The company is undertaking one of the first ever coastal stock assessments on octopuses in Indonesia, while the Meloy Fund is developing a fisher trainer programme to focus effort on adult octopus and protect younger specimens, to ensure they reproduce.” – The Meloy Fund, via [Our Oceans Blog](#)

‘AiiM Partners’ portfolio companies have reduced 500MT of GHGs, created 3,000 quality jobs in disadvantaged communities, 64% of portfolio companies have women CEOs and founders, 50% CEOs and founders who are people of color, and portfolio companies have raised an additional 44 times in follow-on capital’ – AiiM Partners

Lessons learned

“In terms of ocean-related investments, [CI Ventures] focused on more inclusive and ecologically sustainable production models that are anchored in places where CI works, and on technology and engineering solutions that have potential global transferability and translatability. Some of our earliest learnings have been around the importance of ecosystem-development and the role of creative financing solutions that are adapted to the needs of SMEs and early-stage companies operating within emerging markets where risk capital is scarce and traditional exit pathways are either non-existent or very limited. Beyond our direct investing activity, we’ve continued to invest in the build-up, promotion and reinforcement of networks, systems and information/knowledge that enable sustainable markets and innovation to thrive.”

– Conservation International Ventures

Big challenges

“How to gather additional public support in dealing with a public good [fisheries] that has free access, [wherein] fish can be fished by anyone with a license and [many more] with no licenses.” – The Meloy Fund

“Fund raising for a fund focusing on oceans has been the biggest challenge.” – AiiM Partners

POLICY CHANGE

Key takeaways

- IUU fishing and improved traceability continue to be important themes on the international stage. 62 countries have committed to the Port State Measures Agreement, which entered into force in 2016 as the first binding international legislation to combat IUU fishing.
- While almost 5% of the ocean is protected in implemented marine protected areas, implementing proposed or officially announced MPAs would increase the overall level of protection to 7.4% of the ocean.
- The E.U.'s Regulation to deter IUU fishing remains a leading catalyst in deterring IUU fishing, prompting countries such as Taiwan and Thailand to work to remove their yellow card designations.
- Mandatory compliance of the U.S.'s traceability legislation, the Seafood Import Monitoring Program, initiated in 2018, although improvements are needed regarding effective implementation.
- U.S. trade officials continue to remove import tariffs from Chinese seafood products and President Trump signed a "phase one" trade deal with China in January 2020. Since 2018, the escalating trade war between the U.S. and China has significantly impacted seafood trade and the respective seafood industries.

METRICS INCLUDED:

Policy timeline

Port State Measures

Marine Protected Areas

E.U. policy update

U.S. policy update

Timeline of major marine policy legislation and actions (1 of 2)

Year	United States	Rest of the World
2006	U.S. Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006	
2007	Catch share program implemented for Gulf of Mexico Red Snapper Bering Sea closed to bottom trawl fishing	Mexico: Progressive fishery law passed, allowing for the establishment of government-administered fishery refugia Indonesia: Law passed allowing local governments to establish, manage, and fund marine protected areas (MPAs)
2008	IFQ system approved for West Coast groundfish trawl fleet	
2009	200,000 square miles of U.S. Arctic waters protected from industrial fishing	Indonesia: Amends national fisheries act, announcing goals to expand MPAs from six million hectares to 20 million hectares by 2020
2010	Obama signs Executive Order establishing a National Ocean Policy	Europe: E.U. IUU legislation enters into force requiring all seafood imports to be accompanied by a catch certificate with information about the species, catch location, fishing vessel, date of capture, and any transshipments that have taken place
2011	Catch share implemented for the Pacific groundfish trawl fishery	
2012	NOAA meets the requirement specified in the 2007 Magnuson-Stevens Act to implement catch limits for all federally managed fisheries	Australia: Puts ~1/3 of coastal waters into world's largest network of marine preserves Chile: New fisheries law requires individual transferable quotas (ITQs) and other key fishery management actions
2013		Europe: Parliament reforms the Common Fisheries Policy to include requirements to manage maximum sustainable yield and discard bans International: CITES approves international trade restrictions for five species of threatened and endangered sharks

Timeline of major marine policy legislation and actions (2 of 2)

Year	United States	Rest of the World
2014	Obama expands the Pacific Remote Islands National Marine Monument, creating the world's largest protected marine reserve	Europe: The E.U. begins issuing trade sanctions (yellow and red cards) to countries not taking meaningful action to deter IUU. Red- and yellow-carded countries begin to take real action to improve their laws and monitoring and enforcement
	A U.S. Presidential Task Force is established to recommend a comprehensive framework of programs to combat IUU fishing	South Korea: Updates deep-water fishing laws and improves enforcement
2015	U.S. Presidential Task Force on IUU releases recommendations in December 2014, followed by an action plan in March 2015	
	Obama signs the Illegal, Unreported, and Unregulated Enforcement Act to combat IUU fishing and seafood fraud	Mexico: Fishery and MPA enforcement strengthened and turned over to the navy
2016	U.S. is the 21 st country to ratify the Port State Measures Agreement	International: Port State Measures Agreement enters into force as an international treaty after the 25 th party signs on to combat IUU fishing
	Obama administration publishes the final rule establishing the Seafood Import Monitoring Program to deter IUU fishing	International: The Commission for the Conservation of Antarctic Marine Living Resources agrees to create the world's largest marine protected area off the coast of Antarctica
2017	President Trump calls for cost management assessments of all Marine National Monuments and National Marine Sanctuaries created or modified in the past decade	International: The E.U. and nine other countries place a 16-year fishing ban in the central Arctic Ocean
	Traceability compliance for 13 imported fish and fish products begins under the Seafood Import Monitoring Program	Chile: Protects 98% of its exclusive economic zone from bottom sea trawling
2018	The escalating trade war between the U.S. and China significantly impacts seafood trade, with China announcing a 25% tariff on many seafood products from the U.S.	Japan: First revision of the National Fisheries Act since it was established in 1949 introduces individual quotas within the total allowable catch
	U.S. becomes the 4 th country to ratify the Arctic anti-IUU treaty	International: Various states sign the Torremolinos Declaration pledging to bring the Cape Town Agreement into force in 2022 and work to eliminate IUU fishing

66 Countries have committed to the Port States Measures Agreement, moving the agreement into the implementation phase

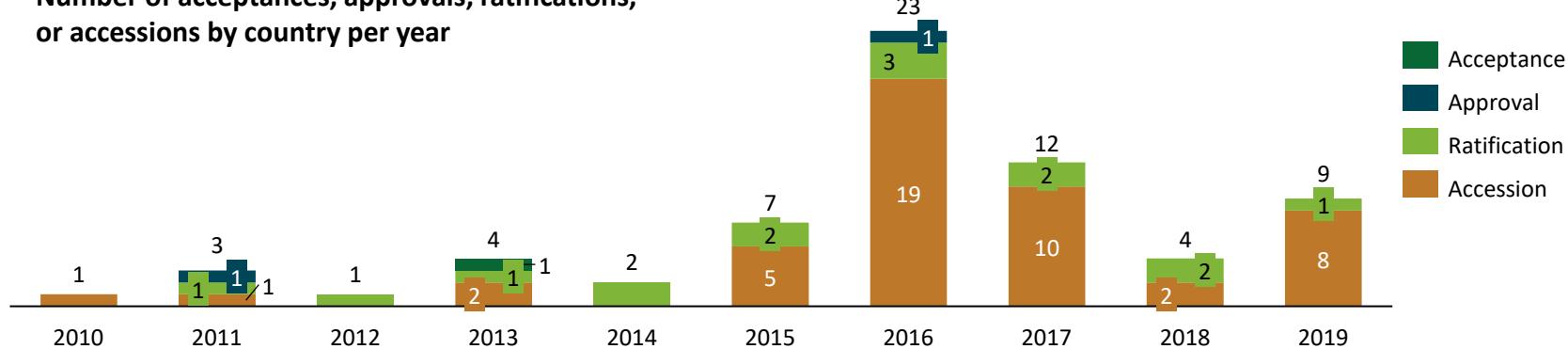
The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA) is the first legally binding international agreement targeting IUU, which accounts for close to \$23.5 billion worth of seafood each year, equivalent to up to one in every five wild-caught fish.

The PSMA, adopted in 2009 by the United Nations Food and Agriculture Organization, entered into force in 2016. The PSMA requires parties to place tighter controls on foreign-flagged vessels seeking to enter and use their ports to land or tranship fish. Global participation is critical to its success.

Particular attention also must be paid to PSMA implementation to ensure that commitments are followed through with effective action and proper application of the provisions of the agreement. In May 2017, parties met to begin to clarify how to implement the agreement and they plan to meet biennially to continue this work, with technical working groups operating in the meantime.

Although governments ratify and implement the PSMA, seafood buyers can institute policies to support its implementation. Buyers can give preference to ports whose States have committed to the PSMA as well as educate States that have not yet ratified the agreement about its importance.

Number of acceptances, approvals, ratifications, or accessions by country per year



Note: The Agreement entered into force thirty days after the twenty-fifth instrument of ratification, acceptance, approval or accession. This number was reached on 6 May 2016 and the Agreement thus entered into force on 5 June 2016.

Sources: Pew Charitable Trusts, "The Port State Measures Agreement: From Intention to Implementation," 2018; FAO Treaties Database, "Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing (PSMA)," 2019.

Almost 5% of the ocean is protected in implemented marine protected areas

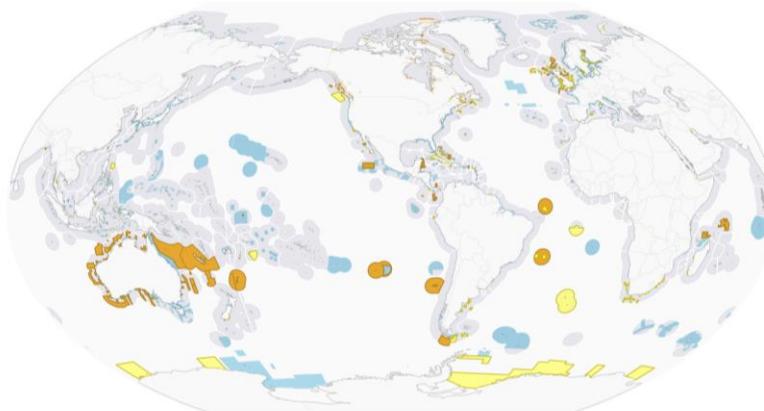
As of August 2019, 4.8% of the world's ocean was protected in implemented marine protected areas (MPAs). Roughly half of this amount, 2.2% of the ocean, was protected as "highly protected marine reserves." Implementing proposed or officially announced MPAs would increase the overall level of protection to 7.4% of the ocean.

The United Nations' target for global ocean protection is 10% of the coastal and marine areas in MPAs by 2020, as set forth by Aichi Target 11 under the Convention on Biological Diversity (CBD). The U.N. Sustainable Development Goal 14 (SDG 14) reaffirms this commitment. According to the most rigorous projections, collective commitments are not currently

on track to meet the 10% global target by 2020, although numerous countries (e.g., Palau, United States, Great Britain) will meet the 10% target for areas within their EEZs. Many scientists emphasize, however, that the 10% target is intended as a first milestone for global ocean protection, rather than an endpoint.

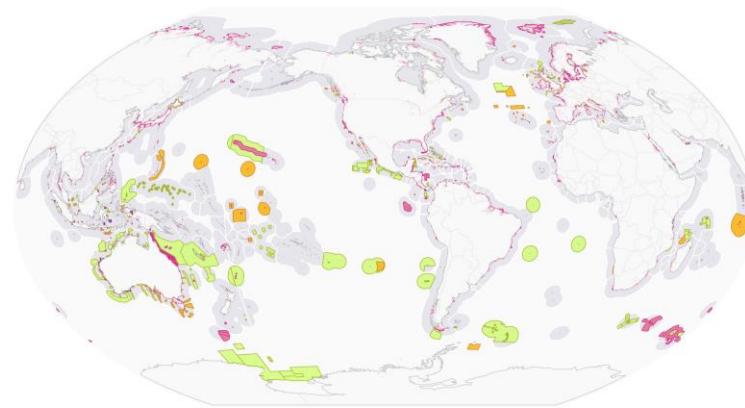
For several decades, MPA coverage hovered around 1%. During 2006–2015, the increased interest in designating very large MPAs (over 100,000 km²) and meeting global targets accelerated the rate of MPA designations. Since 2015, MPAs have been designated at an even faster rate in anticipation of the 2020 target deadlines.

MPAs by implementation status



Marine Protected Areas
Implementation Status
■ Proposed
■ Pending Implementation
■ Implemented

MPAs by recency of implementation



Marine Protected Areas
Designation Year
■ 1888 - 1996
■ 1997 - 2006
■ 2007 - 2011
■ 2012 - 2018

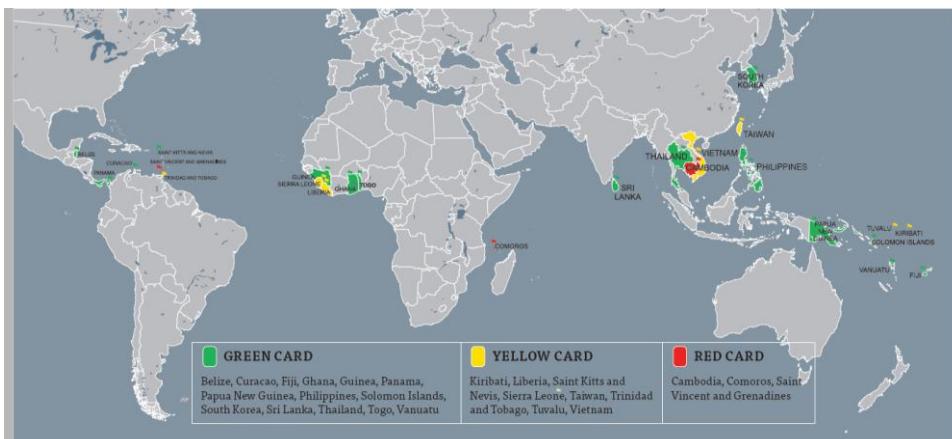
Source: Marine Conservation Institute, MPAtlas (Seattle, 2018), www.mpatlas.org; CEA Consulting. 2019. "Our Shared Seas: Global ocean data and trends for informed action and decision-making."

Ecuador most recently received a yellow card from the E.U.'s anti-IUU Regulation

The E.U.'s anti-IUU Regulation continues to make progress in the effort to reduce IUU globally. The E.U. Regulation to prevent, deter, and eliminate IUU fishing entered into force in January 2010. The regulation requires all fishery imports to be accompanied by a certificate with information about the catch including species, location, vessel, date of capture, and any trans-shipments. Where a product is suspected as IUU, the E.U. member states can refuse to import the fish.

Countries that do not meet minimum requirements can be given a *yellow card*. If issues are not resolved after probation, a *red card* – or trade sanction – can be issued. Currently, Cambodia, Comoros, and St. Vincent and Grenadines are the only countries with a red card.

Countries where the E.U. IUU Regulation has been used and is currently being used¹



Note: The absence of an end year in the time-range indicates that the yellow card is still in effect.

Sources: 1. Environmental Justice Foundation, Blood and Water: human Rights Abuse in the Global Seafood Industry (2019); European Commission, The Common Fisheries Policy: Illegal Fishing; .

Country	Yellow Carded	Red Carded	Red Delisted
Belize	2012	2013	2014
Cambodia	2012	2013	
Comoros	2015	2017	
Curacao	2013-2017		
Ecuador	2019		
Fiji	2012-2014		
Ghana	2013-2015		
Kiribati	2016		
Korea	2013-2015		
Panama	2012-2014; 2019		
Papua New Guinea	2014-2015		
Philippines	2014-2015		
Republic of Guinea	2012	2013	2016
Sierra Leone	2016		
Solomon Islands	2014-2017		
Sri Lanka	2012	2014	2016
St. Kitts and Nevis	2014		
St. Vincent and Grenadines	2014	2017	
Taiwan	2015-2019		
Thailand	2015-2019		
Togo	2012-2014		
Trinidad and Tobago	2016		
Tuvalu	2014-2018		
Vanuatu	2012-2014		
Vietnam	2017		

The Seafood Import Monitoring Program in the U.S. includes 13 species, but more robust implementation is needed to improve its effectiveness

In 2016, the United States established the Seafood Import Monitoring Program (SIMP) as a measure to combat IUU seafood entering the U.S. market.

SIMP is a risk-based traceability program that uses permitting, data reporting, and recordkeeping requirements to prevent IUU seafood and seafood products from entering U.S. commerce. Seafood and seafood products can therefore be traced from point of harvest to entry into the U.S. market. January 1, 2018, was the mandatory compliance date for most of the priority species listed below:

- Abalone*
- Atlantic Cod
- Blue Crab (Atlantic)
- Dolphinfish (Mahi Mahi)
- Grouper
- King Crab (red)
- Pacific Cod
- Red Snapper
- Sea Cucumber
- Sharks
- Shrimp*
- Swordfish
- Tunas: Albacore, Bigeye, Skipjack, Yellowfin, and Bluefin

NRDC's call to action to close SIMP's loopholes:

- SIMP currently applies to roughly 40% of U.S. fishery imports by volume and value. This gap provides an easy pathway for billions of dollars' worth of illegal products to continue to enter the U.S. and is a major incentive for mislabeling between SIMP-covered and non-SIMP products.
- Robust implementation of the Program is needed to ensure that information requirements can effectively identify the legal origin of catches and prevent the entry of illegally caught and fraudulently labeled products. Two significant concerns with current implementation include:
 1. The Final Rule requires the importer of record to provide information regarding a fishing permit or authorization, but the implementing guidance appears to make it optional.
 2. The Final Rule requires the importer of record to include a Unique Vessel Identifier (UVI), defined as registration, documentation, or license number, if one exists, but the implementing guidance appears to make it optional.

For a comparative study of key data elements in import control schemes aimed at tackling IUU fishing in the E.U., the U.S., and Japan, please see [IUU Watch's 2020 report](#).

*Shrimp and abalone compliance became effective on December 31, 2018.

Sources: Communication with Sandy Aylesworth and Molly Masterton at NRDC; NRDC Memo to NOAA on April 29, 2019.