Globally, over three billion people depend on wild and farmed fish as a major source of protein. Nearly one in five—1.39 billion people—are vulnerable because they rely on inadequately managed wild fisheries for a large fraction of their essential omega-3 fatty acids and vitamin B12. And another 11 percent of the world's population—845 million people—are at risk of health impacts from losing irreplaceable micronutrients like zinc, iron, and vitamin A.

Dietary recommendations suggest that Americans eat two to three 4-ounce servings of seafood per week, which means that Americans should on average eat 26 to 39 pounds of seafood per year. In fact, we average far less, consuming 16 pounds per person per year (as of the latest data from 2017, although that number increased more than 6 percent from 2016). The top seafood items remained constant, including, in descending order, shrimp, salmon, tuna, tilapia, and Alaska pollock—with the top three accounting for more than 50 percent of all U.S. seafood consumption. However, there may be signs that Americans’ tastes are beginning to diversify, as consumption of the top 10 items declined from 90 percent to 84 percent in one year.

The U.S. produces considerably less seafood, wild and farmed, than we currently consume—let alone what we should be eating. This creates the much-debated “seafood trade deficit,” currently in excess of $14 billion, which results in more than 90 percent of American-consumed seafood coming from imports. It’s worth noting, however, that the U.S. also exports large amounts of seafood—much of it processed overseas—which is then reimported in a wide variety of forms.

Experts believe that big changes are in store for this global seafood value chain, as China and India become bigger consumers. China is the world’s largest wild and farmed seafood producer, the biggest exporter, the largest processor, and one of the biggest importers. A model from the Food and Agriculture Organization of the United Nations (FAO) suggests that by 2030, China could become a net seafood importer, if the Chinese middle class behaves as social scientists expect, creating big demands and competition for finished seafood products that currently are consumed in the U.S., Japan, and Europe.

SUSTAINABILITY IN WILD FISHERIES

Globally, wild marine fish production has stagnated for nearly 30 years, at about 80 million metric tons (MMT) per year, despite huge increases in total fishing fleet size, and in fishing location and depth. According to FAO, the availability of “underfished” stocks continues to decrease, to 7 percent as of 2016. Few, if any, new fishable resources are being discovered each year; the only really new wild fisheries would be in the Arctic Ocean, opening as waters warm and ice melts. It is important to note that improved wild fishery performance will require both reduced global warming emissions and enhanced cooperation among nations as fish populations move poleward in response to warming. Some nations near the tropics will inevitably lose fish production potential.

The tremendous opportunity for enhanced wild production is being demonstrated in real time in the United States, where policy commitments over the last two decades have turned around U.S. wild fisheries, to approaching near complete sustainability. Today, 45 wild fish “stocks,” once overfished, have been completely rebuilt to healthy levels, and most of the rest are rebuilding rapidly. One good example is the Pacific West Coast groundfish trawl fishery (which catches nearly 100 species of fish that live on or near the seafloor), declared a federal disaster in 2000. Since that time, the use of new and effective management tools, and better science, has rebuilt all but two of those species, many decades ahead of schedule, and the others are nearly there. This fishery is now yielding 17 million newly sustainable meals of seafood each year. In fact, one of the remaining problems there is finding markets for this abundant and sustainable seafood. New marketing programs like “Positively Groundfish” are emerging to educate restaurants and retailers about these now-plentiful species.
In addition, the movement for sustainable wild fisheries is spreading around the globe. Good examples are available for fisheries of all kinds, from large industrial fisheries in the U.S., Europe, Oceania, and elsewhere to smaller-scale, artisanal fisheries in Belize, Indonesia, the Philippines, and elsewhere.

**AQUACULTURE**

Though the relative rate of increase has slowed slightly, farming seafood continues to increase faster than other types of meat production, recently surpassing global wild marine fish production in volume. When plants are included, the world produced 110 MMT of cultured seafood in 2016. Nearly 90 percent of that production occurs in Asia, and about two thirds of global production occurs inland. The vast majority of aquaculture feeds comes from a combination of terrestrial agricultural and wild-harvest fishery sources; fish meal from small pelagic fishes remains important, but continues a gentle but long-term decline. The rapid increase in aquaculture creates added pressure to expand terrestrial crops, with all of the potential side effects on water use and water quality, and also added competition for existing agricultural commodities. Considerable work is underway to develop new feed sources including insects, microalgae, and even microbial synthesis. By contrast, aquaculture production (made up mostly of oysters, clams, catfish, and salmon) is relatively small in the U.S.—especially in comparison to wild fisheries—though the U.S. government continues to advocate increases in offshore finfish aquaculture. The emphasis by sustainability advocates has been on minimizing excessive nutrients that are added to the environment, being efficient in the use of resources for feed, minimizing and eliminating the use of antibiotics, and ensuring that seafood animals are farmed in areas that are biologically appropriate.

**TRACEABILITY**

Many of the remaining problems in the seafood industry come from a lack of traceability, regardless of source. Thus, the quest for fully traceable seafood from boat or farm to plate remains a high priority. The U.S. began the Seafood Import Monitoring Program (SIMP) in 2018. This is a risk-based approach where key traceability data will be reported for 12 species. SIMP is attempting to force the collection of vessel information in an effort to curb illegal, Unreported, and Unregulated (IUU) fishing. IUU fishing runs counter to good management, and often relies on unregistered or forced labor. SIMP is not a labeling program, but it will make it easier for the culinary industry to create boat-to-plate messaging, while ensuring that harmful practices are reduced or eliminated from their supply chains for some of the most common types of seafood.

**PLASTICS**

One important caveat looms, related to filter feeders and, for that matter, all wild and farmed seafood: the prevalence of micro- and nano-plastic fragments moving pervasively through global food webs. Scientific and media reports of high levels in particular seafood species are not yet accompanied by a full understanding of the risks they might pose. A concerted effort is needed to consolidate and amplify knowledge on this front.

**CHEFS AND SUSTAINABLE SEAFOOD**

The sustainable seafood movement has been an important partner with the U.S. conservation movement in achieving the turnaround in wild fisheries, working hard together for two decades to lessen the environmental impacts of the way seafood products are produced from wild fisheries.

Chefs have been actively involved in this movement by advocating for the use of sustainable and lesser utilized species, and by creating linkages from the boats and the farms to the plates; a notable example is the Chefs Collaborative. Chefs and other food industry stakeholders have been actively advocating for sustainable wild fisheries through campaigns like “Share The Gulf” and #ChefsForFish. They were key players in the efforts in 2018 that prevented the U.S. Congress from undermining its foundational fisheries management law, the Magnuson Stevens Act. The James Beard Foundation also launched its restaurant-focused “Smart Catch” sustainable seafood program, which already includes more than 400 qualified restaurant leaders and chefs whose menus have met or exceeded 80 percent sustainability, with additional restaurants committed to attaining this goal. As a leader among QSRs, McDonald’s continues to highlight its Marine Stewardship Council (MSC)-certified Alaskan pollock Filet-O-Fish sandwich, and rolled out an educational card game in 2018 for children to think more consciously about fishing. As is the case for the meat industry, demand for plant-based and even lab-grown seafood products appears to be on the rise.

For all of the work over the last two decades, there is still a great deal of advancement that remains to be accomplished. Issues such as the use of slave and indentured labor continue to be problematic in many places in the industry, and new initiatives continue to be developed. Two examples are the Monterey Framework for Socially Responsible Seafood, led by Conservation International, and the Roadmap for Improving Seafood Ethics (RISE), just released by Fishwise. Additionally, the sustainable seafood movement was dealt a blow in 2018 when an Associated Press investigation alleged that acclaimed seafood distributor Sea-to-Table knowingly sold seafood that was not local, wild, sustainable, and traceable, per its guarantee.

Eating seafood is a central part of the culinary experience for many Americans, especially those who live or vacation near the coast—as most do. Moreover, Americans eat most of their seafood away from home, which offers opportunities for culinary professionals to provide diners with delicious and diverse menu choices, highlighting both sustainable local fish and seafood from around the world that is sustainability sourced, including underutilized species that might otherwise be wasted. Seafood is already the most traded commodity globally, making high-quality and sustainable options available to chefs year-round, even taking the products’ carbon footprints into account.

Chefs have a large role to play in helping the general public expand their knowledge. This starts by chefs diversifying their seafood offerings with sustainability, variety, and affordability in mind. This requires research and recipe development that they should consider an investment in the future of their menus, to be able to continue offering fish and seafood 10 or 20 years down the road. Then, they must explain to their customers how a particular variety relates to something they know, whether in texture or optimum mode of preparation, to take away the fear of ordering or purchasing something new. Training staff in foodservice operations to provide this information to diners in engaging ways can be a helpful approach toward enhancing the impact of the industry’s efforts around menuing and sourcing sustainable seafood.

**SCORE: 3**

Americans eat most of their fish and seafood away from home but only eat half as much as they should. Making responsible choices is difficult, although transformation of U.S. fisheries makes eating locally also generally more sustainable, and that movement is beginning to spread around the globe. Chefs and the restaurant industry can play a lead role in helping Americans eat more fish and do so responsibly, but there’s much work ahead and new approaches are needed.

**IN SUMMARY:**

- Know and trust your supplier, and be engaged. You should be confident the product you purchase meets your sustainability and traceability requirements. Ask questions of your suppliers, and comment while certification organizations are revising their standards.
- Americans eat most of their fish and seafood away from home but only eat half as much as they should. Making responsible choices is difficult, although transformation of U.S. fisheries makes eating locally also generally more sustainable, and that movement is beginning to spread around the globe. Chefs and the restaurant industry can play a lead role in helping Americans eat more fish and do so responsibly, but there’s much work ahead and new approaches are needed.
- Sustainable seafood should be a major pillar around which food businesses and institutions build their operations and strategic plans.