Opportunities in Alternative Seafood
June 25, 2020
Overview

1. **Why alternative seafood and the current market** - The Good Food Institute
   - Introduction to GFI
   - Projected global seafood demand
   - Advantages of plant-based and cultivated seafood
   - The current state of the alternative seafood market

2. **Future consumer trends** - Changing Tastes
   - How will we eat seafood in the U.S. in the next 3-5 years?
   - Data from consumers, menus, and foodservice purchasing decision-makers
Introduction to GFI and alternative proteins
Our Mission

Harnessing the power of food innovation & markets to accelerate plant-based and cultivated meat, eggs, and dairy to create a sustainable, healthy, and just food system.
How will we feed 10 billion people by 2050?

Sustainably  
Efficiently  
Safely
# Three categories of alternative seafood

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<td><img src="image" alt="Quorn" /></td>
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The Good Food Institute

Accelerating the shift to a sustainable, healthy, and just food system through three key areas of work:

**Science and Technology**
Advancing and open-sourcing the foundational science of plant-based and cultivated meat

**Corporate Engagement**
Consulting with the world’s biggest food companies to help them capitalize on opportunities in the plant-based market and supporting startups to drive innovation

**Policy**
Advocating for fair regulation of plant-based and clean meat and lobbying for governmental investment in sustainable protein R&D

We act as a force multiplier, bringing the expertise of our departments to the rest of the world.

GFI officially earned GuideStar's 2020 Platinum Seal of Transparency - obtained by less than 1% of nonprofits - reflecting our commitment to maximum impact, efficiency, and inclusion.

90+ staff in 6 countries
How GFI is funded

GFI is 100% powered by philanthropy.

Our 2,800+ donors include:

- Individuals 75%
- Private Foundations 25%

We accept corporate support:

Event sponsorship:
- Kellogg’s MorningStar Farms
- Beyond Meat
- EY

Supporting GFI’s Research Grant Program:

Funds critical alternative protein open access research and connects researchers to private sector partners.
Keep up with the news from GFI

Sustainable Seafood Initiative newsletter (launching this summer)
https://go.gfi.org/seafood-newsletter

Plant-Based Insider
https://www.gfi.org/insider

GFI e-news
https://www.gfi.org/e-newsletter
Global seafood demand is on the rise.
Projected population growth

High population growth is projected in low- and middle-income countries.

- **2013**: 1.3B high income, 0.9B low/middle income, 5.9B overall, 7.2B total
- **2050**: 1.4B high income, 1.8B low/middle income, 8.2B overall, 9.6B total
- **2100**: 1.5B high income, 2.9B low/middle income, 9.6B overall, 10.9B total

Source: UN-DESA, 2013

Big Facts
ccafs.cgiar.org/bigfacts
Projected income growth

Source: Simulation results with World Bank model, 2009
Growing global demand for seafood

Global demand for seafood is projected to be 30% higher than 2010 levels by 2030.
Projected seafood demand

How will we meet increasing demand?

- Aquaculture growth is only anticipated to keep pace with increased demand for 17 countries, while around 170 countries will be left with substantial unmet demand (2017 FAO study).
- Marginal increases in wild-caught seafood

Sources: Historical data, 1950-2016; FAO (2017b) and FAO (2018).
Projections to 2050: Calculated at WRI; assumes 10 percent reduction in wild fish catch from 2010 levels by 2050, linear growth of aquaculture production of 2 MT per year between 2010 and 2050.

FISH TO 2030
Prospects for Fisheries and Aquaculture

wri.org
Another supply source: alternative seafood

Sources: Historical data, 1950–2018: FAO (2017b) and FAO (2018). Projections to 2050: Calculated at WRI; assumes 10% percent reduction in wild fish catch from 2010 levels by 2050, linear growth of aquaculture production of 2 Mt per year between 2010 and 2050.

WORLD RESOURCES INSTITUTE
Advantages of alternative seafood production
Demand for seafood is largely met through two production systems

**Wild-capture fishing**

**Aquaculture**
Alternative seafood eliminates concerns with wild-caught seafood

- Limited stocks
- Bycatch
- Habitat damage
FAIRR report shows aquaculture investment risks

This slide is reproduced courtesy of the FAIRR initiative, a global investor network focused on risk and opportunity in protein supply chains. For more information please see www.fairr.org
Greenhouse gas emissions of seafood
Seafood emissions relative to pork
Efficiencies of alternative seafood supply chains

Because alternative seafood can be more demand-driven than conventional seafood, producers are able to:

- Respond quickly to changes in demand
- Locate facilities close to demand centers
- Only produce what consumers want
- Reduce waste
The current landscape
Three categories of alternative seafood

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Plant-based seafood
Using plant-derived ingredients to replicate the flavor and texture of seafood

*Often thought of as “plant-based”
Quorn actually uses fermentation to create its signature ingredient, mycoprotein
Plant-based seafood startups

- **Sophie’s Kitchen**: Plant-based tuna, shrimp, and salmon
- **New Wave Foods**: Plant-based shrimp using algae, soy and pea protein
- **GOOD CATCH**: Plant-based tuna, burgers, crab cakes using legumes
- **Ocean Hugger Foods, Inc.**: Plant-based tuna and eel alternatives using whole vegetable ingredients
New plant-based seafood companies

- **Kuleana**
  Plant-based raw bluefin tuna sashimi

- **Hooked**
  Plant-based shredded seafood products

- **Wild Skinny Clean**
  Plant-based shrimp and crab cakes
White space in plant-based seafood

- **We eat 200-300 different species of seafood.**
  
  Because far more species of fish are consumed compared to species of land animals, there are nearly endless opportunities to develop novel products.

- **Most plant-based products are ground or minced.**
  
  With more sophisticated manufacturing methods, it may be possible to create the layers of fat, collagen, and protein that give fish its desirable cooking properties like flakiness.

- **Very few products are in the fresh, refrigerated category.**
  
  Most plant-based seafood products are either shelf-stable or frozen. Plant-based seafood could build on the long-standing success of refrigerated plant-based milk and the momentum of fresh plant-based burger growth.
Cultivated seafood could reach the market before cultivated terrestrial meat

Potential technical advantages:
1. Can grow in lower temperature
2. Can grow in low oxygen conditions
3. High buffering capacity - ability to maintain neutral pH
4. Rapid growth of muscle cells
5. High expression of telomerase
6. Simple structure relative to muscle tissues found in many terrestrial animals.

Cultivated seafood
Produced by cultivating cells from marine animals
Recent investment activity

- **2017**: $4 million
- **2018**: $16.7 million
- **2019**: $41 million
- **2020 YTD**: $35 million and counting

Source: Disclosed funding via Pitchbook, 2017-present.
Plant-based seafood accounts for just $9.5 million (1%) of total plant-based meat dollar sales - **Plant-based seafood is a market white space.**

Note: the data presented on this slide is based on custom-GFI plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories.
Plant-based versions of beef, poultry, and pork products make up more than 60% of plant-based meat sales.

Note: the data presented on this slide is based on custom-GFI plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories.

Source: SPINSscan Natural and Specialty Gourmet (proprietary), SPINSscan Conventional Multi Outlet (powered by IRI), 52 weeks ending 12-29-2019
Fish and shellfish are underrepresented in the plant-based meat market

Animal-based and plant-based meat comparison: dollar sales by animal-type

Note: Animal-based meat dollar sales for year ending August 2018; plant-based meat dollar sales for year ending April 2019; the data presented on this slide is based on custom-GFI plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories.

Source: Nielsen custom defined data set, xAOC + WFM, 52 weeks ending 8/11/18; SPINSscan Natural and Specialty Gourmet (proprietary), SPINSscan Natural and Specialty Gourmet (proprietary), SPINSscan Conventional Multi Outlet (powered by IRI), 52 weeks ending 12-29-2019
The retail seafood category is worth $15b, with finfish accounting for ~50%, and shellfish for ~1/3.

Source: Nielsen, xAOC+Whole Foods, 52 weeks ending 12-31-2019
Within finfish, salmon and tuna comprise the majority of volume at over 60% of dollar sales

Note: “All other finfish” includes anchovy, flounder, grouper, haddock, halibut, herring, mackerel, mahi mahi, perch, pollock, roughy, sardine, sea bass, snapper, sole, swordfish, trout, and whiting

Source: Nielsen, xAOC+Whole Foods, 52 weeks ending 12-31-2019
Shrimp makes up the majority of shellfish sales, followed by crab.

Retail shellfish dollar sales and YoY growth, by animal type
2019

Note: “All other shellfish” includes clams, conch, crawfish, crayfish, lobsters, mussels, oysters, and scallops
Source: Nielsen, xAOC+Whole Foods, 52 weeks ending 12-31-2019
The opportunity for plant-based seafood to reach just 1% share of the seafood market is worth $141 million.

Note: SPINS does not report non-UPC meat counter sales. To account for this, the plant-based meat total retail share calculation uses the $95 billion total meat market size reported by Nielsen, as this number includes both retail packaged meat sales and non-UPC meat counter sales. The plant-based data presented on this slide is based on custom-GFI plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories.

Incumbent protein companies are getting on board

**Broaden**
their consumer base by making something for everyone.

**Appeal**
to the next generation of protein consumers.

**Enhance**
their sustainability and social responsibility stories.

**Diversify**
sources of supply and investments to increase resilience to shocks.
Tyson Ventures

- Invested in plant-based seafood company New Wave Foods in September, 2019

“I tasted it for the first time in a cafe in Palo Alto, and I had no idea I was eating plant-based shrimp.”

- Former Tyson Ventures CFO Tom Mastrobuoni

Photo credit: New Wave Foods
Van Cleve Seafood

- Virginia family-owned seafood company
- Launched plant-based shrimp and plant-based crab cakes in new line in October, 2019

“We see the trend turning into more of a movement and wanted to create something to satisfy everybody. Since we know seafood so well, who better than us to create the plant-based alternatives that taste just like the real thing?”

- Shelly Van Cleve, co-owner and VP of Product Development, the Van Cleve Seafood Co.
Nutreco

- Announced strategic partnership with BlueNalu in January, 2020

“Since the global demand for protein is increasing, we need to provide protein from a variety of sources, including traditional aquaculture farming as well as new innovative solutions. Nutreco’s strategic partnership with BlueNalu is very exciting as it opens the opportunity to up-scale real seafood production in a highly sustainable way.”

- Rob Koremans, CEO, Nutreco
Bumble Bee Foods

- Joint Venture with Good Catch announced March, 2020
- CEO joined board of Gathered Foods in April, 2020

"It is critically important that as an industry we continue to find innovative solutions to decouple growth with environmental impact. Providing great-tasting alternative ways for consumers to enjoy ocean-inspired foods is a key pillar of our long-term commitment to ocean health."

- Jan Tharp, President & CEO, Bumble Bee Foods
Alternative seafood is already global
Alternative seafood is already global
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