

SEA-FARMING FICTIONS

Scrutinizing the food security impacts of aquaculture industry growth and long-standing salmon farming myths.



The salmon farming industry likes to say:

“Eat a farmed fish, save a wild fish.”

It's a simple hypothesis: if consumers substitute farmed seafood for wild, that should alleviate fishing pressure on wild stocks. **If only it were true!** The salmon farming industry is also fond of claiming that they are “feeding the world”. Far from fixing food shortages, a closer look reveals that farmed salmon remains expensive and inaccessible to many outside the global upper and middle classes. Industrial salmon aquaculture prioritizes high-value seafood over products that could truly meet human needs for affordable protein¹.

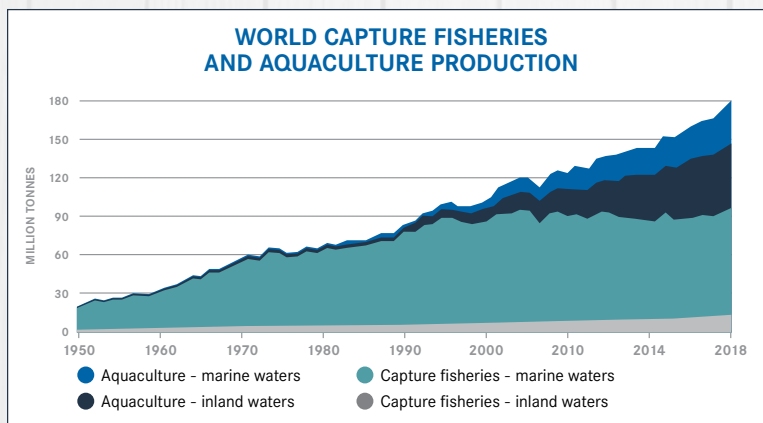
Sea-farming fictions often stem from the fact that aquaculture is a diverse industry. Some types of aquaculture require very few or no feed inputs, thereby minimizing environmental impacts (e.g. mussel or kelp farming). Other forms of aquaculture require a multitude of feed inputs, often including wild fish (e.g., open net-pen salmon farming) and thus “aquaculture” ranges widely in environmental impacts. The salmon farming industry, for example, often presents as a form of aquaculture that really *could* contribute to food security. Unfortunately, it's mostly just clever marketing. **Time to bust a few myths** and get to the truth about aquaculture and salmon farming as part of our global food systems.

OVERFISHING STILL ON THE RISE WHILE AQUACULTURE GROWS

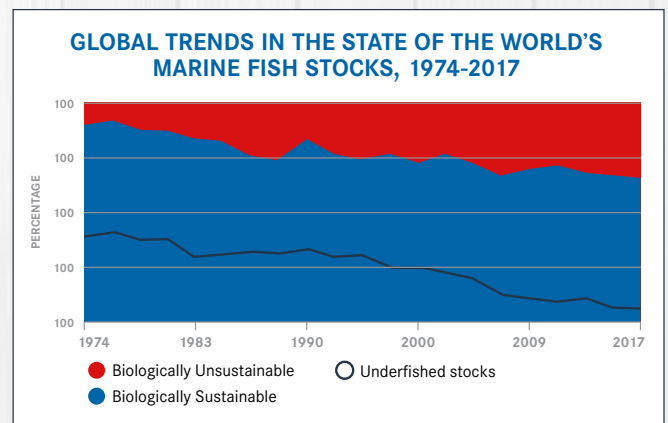
Contrary to industry reporting, a 2019 review of aquaculture's global capacity to reduce pressure on wild stocks showed that capture fisheries have not seen any decline corresponding with the growth of the aquaculture industry². Rather, while global aquaculture production has steadily increased in the past decades, total global fisheries landings during the same period have levelled off and the number of fish populations that are overfished or fished to capacity has steadily increased. Aquaculture is only adding production, rather than replacing wild capture fisheries³. With finfish aquaculture still relying largely on wild fish inputs, efforts to replace wild capture fisheries are erased by the growth in overall aquaculture production.



Farmed Atlantic salmon with a louse on it at a Canadian grocer. Photo: Alexandra Morton



Since the 1990s, overall seafood production has increased due to an increase in aquaculture production, while global fishing catch has remained relatively stagnant. (Source: FAO. 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in Action. Rome)



The number of fish stocks that are overfished has increased as aquaculture production has grown, indicating that aquaculture has not reduced pressure on wild stocks. (Source: FAO. 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in Action. Rome)



Fishing for Atlantic menhaden, a keystone forage fish species commonly harvested for salmon aquaculture feed. Photo: Gordon Campbell, At Altitude Gallery.

AQUACULTURE RELIANT ON WILD FISH INPUTS CAN REDUCE GLOBAL FOOD SECURITY AND ENHANCE FOOD INEQUALITY

While aquaculture is an important food source in many nations, aquaculture operations that rely on wild fish inputs consume about 15-18 million tons of wild fish per year, approximately 17 percent of all global fisheries landings^{4 5 6}. This vast consumption by the aquaculture industry is concerning, as declining capture fisheries threaten the nutrition of more than 800 million people across the developing and emerging world⁷. Scientists estimate that some 90 percent of today's aquaculture-directed catch consists of edible wild fish that could be a primary food source⁸.

Indeed, as wild stocks dry up in some coastal nations, fish once used to feed low-income communities are often harvested for fishmeal, used to produce much more expensive protein products by industrial fish and animal farming businesses; a crisis of food inequity identified as early as the 1990s⁹. These fishmeal fisheries are known as "reduction fisheries". Agricultural feeds, pet feeds, commercial fishing bait, and other non-aquaculture products contribute to the global reduction catch¹⁰. While some reduction fisheries are considered sustainable¹¹, recent reporting suggests that the number of sustainable reduction fisheries is on the decline worldwide¹².

Reduction fisheries, which support the development of aquaculture feed products, target small schooling species at the core of marine ecosystems: anchoveta, blue whiting, herring, capelin or menhaden¹³.



After promising to reduce pressure on wild stocks, demand for salmon products of all kinds is greater than ever

When the concept of salmon farming first began to scale in countries like Norway and Canada through the 1980s, many believed it could help to prevent the decline of wild Atlantic salmon populations across the North Atlantic by offering a food alternative. With support from wild salmon conservation organizations and others who bought the narrative, the salmon farming industry grew significantly in decades to come. Today, years of successful industry advertising efforts have developed new markets for salmon products all over the world, driving global demand for salmon to new all-time highs¹⁴. Pressure on wild salmon stocks remains as high as ever.

Alternatives to fish and fish oil in salmon feed products: acknowledging industry progress and recognizing limitations

Historically, salmon farmers required upwards of five pounds of wild fish to produce one pound of market-ready salmon¹⁵. The industry has made a significant effort to reduce this ratio¹⁶. Research now suggests that alternative feeds using less wild fish content *can* effectively raise farmed salmon¹⁷. Insects, algae, yeast, soy and other crops show early promise as protein and oil replacements¹⁸. However, some of these alternatives have yet to find sizable markets¹⁹. Others, like soy, are sometimes produced at the expense of rainforest and other wild habitat, making the location of production very important. It is not yet clear whether these developments will benefit the long-term preservation of wild fish stocks²⁰.

FARMED SALMON IS AN EXPENSIVE PRODUCT THAT FOOD-INSECURE NATIONS AND LOW-INCOME CONSUMERS CANNOT AFFORD

In 2018, United Nations Secretary General Ban-Ki-Moon referenced aquaculture as a key and growing contributor to the international fight against world hunger. Salmon farming companies have been quick to steal this praise for themselves, despite the fact that salmon products are far too expensive for most food-insecure consumers. Spuriously, most of Canada's largest salmon farming operators, including **Mowi**, **Cermaq** and **Grieg**, and the industry trade group **Global Salmon Initiative** reference this United Nations language and/or promote salmon farming as a solution to world hunger on their respective websites.

In reality, salmon farming companies target high-income export markets rather than producing fish for food-insecure nations²¹. About 70 percent of farmed salmon sold by MOWI, the world's largest farmed salmon producer, is consumed in North American and EU markets²². High price points relative to other protein sources make salmon impractical for most of the world's consumers, and entirely inaccessible for the global poor²³. Even in Canada, one of the wealthiest nations on the planet, high retail costs put salmon products out of reach for many.

Salmon fillets typically range anywhere from \$7-25/lb., depending on the source, in Canadian grocery stores—here's how salmon stacks up against other available protein options



Atlantic salmon fillet



Boneless chicken breast



Lean ground beef



Haddock fillets



Pork loin



Mussels

(Atlantic Superstore, Halifax, NS | Oct. 2021).

CALL TO ACTION

Aquaculture has the potential to increase resilience in global food systems, but a prioritization of high value sales in wealthy nations over food security in poor nations, and seafood that relies on wild fish feed, greatly diminishes that potential²⁴. For the salmon farming industry, contributions to the resilience of global food systems are essentially impossible, with expensive products and major fish feed requirements. In Canada, if we want an aquaculture industry that can help to feed food-insecure people and preserve ecosystems, we must move towards affordable, non-carnivorous species that do not necessitate significant feed inputs (i.e., species other than farmed salmon). With aquaculture legislation now undergoing some major changes across the country, we can build for the future and be a leader in responsible aquaculture production.

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