The Case for Embracing Seafood

Seafood from beloved salmon and shrimp to the obscure but esteemed oysters and scallops have been part of our historical culture for centuries. Whether or not you're a seafood lover, the industry of Aquaculture, better known to some as fish-farming, continues to be one of the fastest growing industries in food production. But despite the huge growth, public perception of finfish and shellfish continue to get a poor reputation for its wrongly perceived nutrition and environmental impact. As the industry continues to grow bigger, the likelihood of people not eating seafood in our futures seems slim. Instead, we as Americans should re-evaluate and add seafood to our diets since they can be environmentally-friendly and healthy additions to our plate.

We hear it all the time, that the fish in our oceans will soon deplete and nothing will be left. So how could we eat more fish and seafood without hurting our oceans? The answer to that is the same to what we've been doing to our land animals we eat, farming. Humankind has been farming fish and seafood for centuries yet its potential for mass production has only been realized in the past few years. It's only recently in the past few years where production from aquaculture has begun to almost match the output of wild capture. Rather than fishing out the fish of the sea, aquaculture presents the alternative method to obtaining commodities from our aquatic environments by domesticating salt and freshwater species for human use.

![Graph showing Inland Capture and Marine Capture Production over time](image)

However, aquaculture has always been under heavy scrutiny. Like any form of domestication, farming organisms carry risks and drawbacks such as creating possible pollutants, being very resource intensive, reducing genetic variability, pathogen harboring and even creating invasive species. Improper farming can even lead to algae blooms, known for taking up all the oxygen in the water and killing surrounding organisms. Farming for big predator fish like salmon and tuna have been known to require lots of feed fish which may require lots of wild caught fish in itself, this type of aquaculture called intensive utilizes additional nutrients like fertilizer from another source. While antibiotics may also be used to combat disease just like how antibiotics are used in domesticated land animals.

Some of these legitimate criticisms inaccurately represent aquaculture as a whole. Shrimp farming, which is known to wreak havoc on its environment and be highly susceptible to disease, only represent less than 9% of the entire aquaculture industry. Extensive aquaculture (vs intensive aquaculture) utilizes natural food sources instead of direct addition of feed. Many species farmed via this style include filter feeders that feed on the phytoplankton, such as carp, tilapia and many types of shellfish. The species
that is farmed is incredibly important in determining the farm's environmental impact. While top of the chain fish like salmon are heavy polluters, species like tilapia and many shellfish like mussels and oysters have the ability to purify their surrounding waters. Culturing shellfish like mussels and oysters have been shown to be able to denitrify the environment and clear up waters, allowing for the growth of aquatic grass like eelgrass and creating habitats for foraging used by other animals while culturing seaweed can even possibly restore coral reefs.

![Aquaculture](image.jpg)

Luckily, research and investment into creating solutions for these problems have been in constant development. "The Aquaculture area allows you to get creative and opens up a whole other suite of places to farm food" says Megan Hall, a PhD student studying marine biology at the University of Southern California (USC). For example, mariculture (aquaculture in the sea) requires species that live in seawater. "When these species use saltwater, the freshwater that is required in lots of aquaculture is not needed or polluted", commented Hall. "There is tons of room for improvement (in mariculture)."

Despite many technical challenges to mariculture such as the corrosiveness of salt water and nature of the ocean, this relatively untapped area represents potential growth for the industry.

Dennis Hedgecock of USC has been working on a Future of Food initiative with several other Scientists by researching on how to breed oysters like your average farm grown bundle of corn. "We're able to breed two pure genetic lines of oysters to create a hybrid that is just overall much bigger similar to how corn is bred now," commented Dr. Hedgecock. It is fundamental research on aquatic organisms that researchers like Dr. Hedgecock has worked on for many years that have allowed us to discover this phenomenon in oysters, which has potential for wide applications. Not only would we be able to farm larger than average oysters, we'd be able to use this mariculture to not only produce food but clean the environment.

By creating habitats and filtering the seawater while we're farming, we'll be able to alleviate the reduction in biodiversity that's been happening across the globe. How does this aquaculture business
translate to us as a consumer? Aren't these just issues that the industry could take care of? As we find ourselves eating more seafood, we need to be vigilant and aware of the food we are eating. Without proper regulation in the industry, the criticisms that face aquaculture will always overcome the positive. Improper farming techniques will become rampant if we don't monitor the industry.

But can our diets even handle more seafood? Walking into my local supermarket, I noticed something; the seafood department is pretty small. It's quite odd but 75% of Americans on average consume less than 4oz of fish a week which could explain why the seafood selection at our market is diminishing. Yet the FDA in this past summer has released guidelines stating that especially pregnant women and children should be eating 8-12 oz. and 6-8 oz. of fish a week respectively. Seafood contains the most omega-3's which are believed to be beneficial to our heart health. Pretty important for a nation where health disease is a leading cause of death.

But perhaps seafood will be the next food trend everyone will embrace soon just like kale or gluten-free diets. It's tough to say since we've definitely grown tired of hearing about the need to eat more fish and less red meat like the Japanese or the Mediterranean to live longer lives. But what about all the bad things we've heard about eating too much seafood, the cholesterol, the mercury? Shrimp and lobster are big culprits for cholesterol yet shrimp, although having more cholesterol oz. per oz. than steak has less calories, and much less fat despite having more beneficial omega-3 fats than steak. Even though tilapia has more cholesterol than salmon, it is more environmentally friendly and cheaper. There's a place for all kinds of seafood in our diet. It will just take time adjusting too. Of course remembering to eat everything in moderation is important.

Trying to get your own friends, who are afraid of that fishy taste, to eat a single oyster is a great challenge. Just the other day my friends and I went to a seafood restaurant and a 1/4 of us would not touch the grilled oysters despite being properly cooked and being a recommendation from our server. But when the oyster shooters came out, everyone signed up to take a shot. It goes to show that sometimes you just got to take a different approach. Getting kids to eat fish is may just be the most difficult task any parent can have, but it's definitely not impossible. Children all over the world consume fish every week as part of their natural meals but it's hard to expect your own children to eat healthily if you have trouble with that as well.
It’s always good to try new things. If you’re adverse to seafood, it might be time to order that fish option or go to a dedicated shellfish restaurant. Otherwise you may just lose out on the health benefits. If you’ve already been eating lots of finfish and shellfish, perhaps for an adventurous night out try a species that's environmentally friendly like carp or some mussels. If we can create the demand for the way we want our food, the industry will have to listen.