



THE UNSEEN IMPACTS OF EATING SEAFOOD

Heirs Charley and Cambria, February 2019

When was the last time you bought or ordered seafood? When you purchased it, did you think about whether or not it was caught sustainably? Did you think about what toxins might be in the seafood? Did you think about how the seafood was taken from its habitat? Did you think about what sort of effects these things might have on you and your family?

One of the most dangerous threats to our ocean is a lack of knowledge. How are we, our oceans, and our water affected by industrial seafood activity? How does eating seafood impact our oceans? When we eat unsustainable seafood, it affects our oceans in many ways. One of the most commonly missed connections is between the seafood industry, habitat destruction and plastic pollution.

Overfishing



Overfishing occurs when industrialized fishing vessels take more seafood from the sea than the population can replace. Gathering as much seafood as possible might seem like a profitable idea in the moment, but in the

long-term, overfishing is a mistake. Thousands of fisheries are pushing over this limit. Several important commercial fish populations, such as Pacific Bluefin Tuna, have been so overfished that they are now threatened or endangered species.

Threatened and endangered species can cause a trophic cascade. When an ecosystem loses too many individuals of one organism, the animals that depend on the organism for food starve. If the lost organism is a predator, its prey booms in population, and the food source of the prey is depleted. This vicious cycle continues on until everything in the ecosystem dies off.

Overfishing is not only causing imbalance to our oceans, it is also directly impacting humans. Billions of people rely on fish as their main protein source. With less fish and a higher price, this can become a problem.¹

Illegal Fishing

With fish at a high value illegal fishing becomes prevalent. It is estimated that up to one in every five fish are taken from the sea by illegal methods.²

Violations of international fishing laws include: taking undersized fish, fishing in another



Image Credit: Sea Shepherd UK 2019

¹ “Overfishing”, World Wildlife Fund, <https://www.worldwildlife.org/threats/overfishing>

² “Up to 1 in 5 Fish Sold Is Caught Illegally-and Other Surprising Illegal Fishing Facts”, The Pew Charitable Trusts, 13 Nov. 2017, <https://www.pewtrusts.org/en/research-and-analysis/articles/2017/11/13/up-to-1-in-5-fish-sold-is-caught-illegally-and-other-surprising-illegal-fishing-facts>,

country's waters without permission, fishing in closed areas, and using illegal gear or taking more fish than is permitted.³

Some fishing practices are made illegal because of their high negative impact on our oceans. But not all detrimental fishing practices are banned everywhere. Different countries, regions, and even states have separate bans on various types of gears. When these regulations are disregarded it can be extremely detrimental to the environment. For example: In an area that is overfished, fishermen and industrial fishing companies may turn to juvenile fish that are underneath the legal size limit. This does not allow the fish population of that species to grow. Eventually, if this cycle continues, the area can end up void of fish or even all life.

By-catch



Image Credit: Seafood Watch 2019

By-catch occurs when fisheries catch fish that are not the targeted species. Sometimes fishermen discard the by-catch throwing the injured animals back into the ocean. Many fisheries only keep half the fish they catch! Other times fishing industries choose to keep the by-catch because it is valuable. For example, shark fins are highly valued, so when a shark is caught as by-catch, their fins

are typically removed and kept killing the shark.

One of the biggest contributors to the problem of by-catch is shrimp fisheries which catch up to six pounds of by-catch for every pound of shrimp.⁴ Shrimp trawls are

³ "Illegal Fishing", World Wildlife Fund, <https://www.worldwildlife.org/threats/illegal-fishing>,

⁴ "Effects of Fishing for Wild Seafood", Seafood Watch Program at the Monterey Bay Aquarium, <http://www.seafoodwatch.org/ocean-issues/wild-seafood>

especially harmful to turtles. Some companies have even added a special hatch so that turtles can escape the trawl if caught.



Image Credits: C. Robins. 2008

The swordfish industry is also especially detrimental in its amount of by-catch. For every one swordfish caught with a drift-gill net, it is estimated that seven other life forms, such as turtles, dolphins and sharks, are caught as well.⁵



Image Credit: Alessio Viora Marine Photobank 2019

⁵ "Shocking Undercover Investigations of Commercial Seafood Industry Expose Cruelty of Driftnets", Turtle Island Restoration Network, April 9 2018, <https://seaturtles.org/20085-2/>,

Habitat Destruction

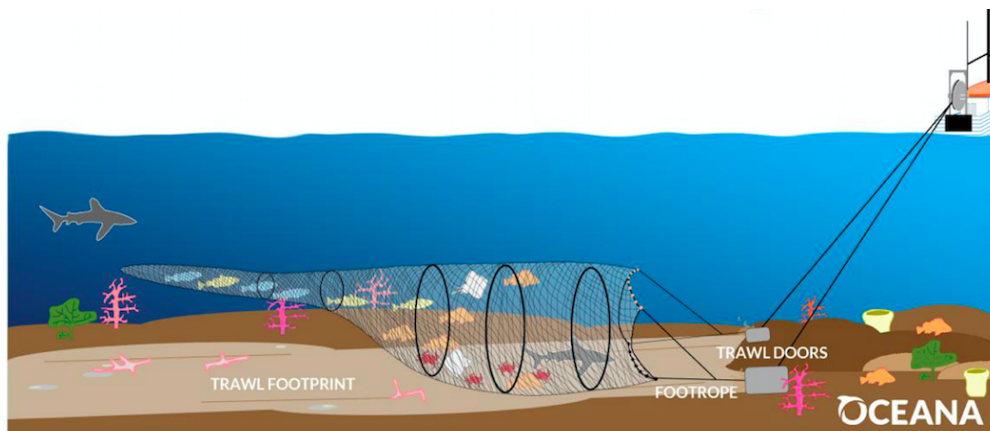
Unsustainable fishing practices can lead to habitat destruction. Bottom trawls, for example, are one of the worst offenders. Bottom trawls are a type of fishing gear that pulverize everything in their path.⁶ This is especially a problem in deep sea habitats.



Image Credit: Peter Etnoyer NOAA and the Schmidt Institute 2012

Deep sea habitats, including corals, are extremely damaged by this destructive practice. Bottom trawls are made up of huge nets that have weights attached to keep them down. These weights drag along the seafloor like huge wrecking balls of the sea. Because of habitat destruction, fish and other forms of marine life have no place to mate and raise

their young.



⁶ "Bottom Trawling", Oceana, <https://usa.oceana.org/bottom-trawling>.

Deep sea habitats are very important to many forms of life, including rockfish, a popular seafood. Think about it: When someone fishes for rockfish, they end up destroying the habitat that rockfish need to continue reproducing and feeding. This leads to even less fish to eat and less to replenish the population. This unfortunate practice needs to be stopped so our generation can have healthy oceans.

In spring 2018, the Pacific Fishery Management Council moved to protect 140,000 square miles of the US west coast from destructive bottom trawling practices due to the work of various organizations, including Oceana and PEW Trust, testifying against bottom trawling and educating on the ill effects of bottom trawling to essential marine life habitat. We also testified, joining forces with these committed organizations. Thank you PFMC for hearing the voice of the next generation and making the decision that you did to protect so much of our west coast deep sea habitat from bottom trawling!



Heir Charley testifying before the Pacific Fishery Management Council, April 2018, regarding protection of “essential fish habitat” from bottom trawling.

Derelict Fishing Gear



Image Credit: NOAA

There are many ways plastic can hurt the ocean and marine life. Some ways are through ingestion and entanglement of marine life. Sometimes fishermen lose or abandon their fishing gear. This becomes Derelict Fishing Gear (DFG).

“Ghost Fishing” occurs when an animal dies from entanglement in DFG. This is a serious problem on the US east and west coast for whales. They are often entangled in fishing nets, ropes and crab pot lines. Crab pots can be up to 900 feet long!



Heir Charley visits a crab fishery in Bodega Bay, CA, observing miles of crab pots.



Entanglement often results in a whale's death, as they are unable to surface, can't forage for food, can't take care of their young, or lose their tails when an entangled rope

slices through their flesh. Sea lions, seals, turtles, seabirds, and other forms of marine and land animals are all also at risk for entanglement.

A study published last year by The Ocean Cleanup project found that 46% of the plastic in the Pacific gyre or “Great Pacific Garbage Patch” is DFG.⁷ All of this DFG is not only harmful for the reasons above. It is also made out of plastic. This can lead to the plastic breaking down to become microplastics.



Photo above: In November 2018, during an H2OO organized beach sweep and brand audit, Heir Charley and fellow Palauan Heirs spent hours trying to organize found DFG on an uninhabited island of Palau in the Pacific for, hopefully, reuse). **Photo below:** Heir Cambria along with fellow Heirs sorting and conducting a brand audit..

⁷ Parker, Laura, “The Great Pacific Garbage Patch Isn’t What You Think it Is”, National Geographic, 22 March 2018, <https://news.nationalgeographic.com/2018/03/great-pacific-garbage-patch-plastics-environment/>



DFG becomes Microplastics

In our oceans plastic breaks down into smaller and smaller pieces. These small plastic pieces are called microplastics. A microplastic is a piece of plastic smaller than five millimeters, about the size of the eraser on your pencil. DFG is made out of polypropylene, a type of plastic that breaks down in the sun, accordingly it contributes to the microplastic problem of our oceans.⁸

These small pieces of plastic are easily ingested by animals. Animals such as birds, fish, turtles, whales, shellfish and many others are affected by these minute plastics.

⁸ "Derelict Fishing Gear", NOAA Marine Debris Program, <https://marinedebris.noaa.gov/types/derelict-fishing-gear>.

Why is this a bad thing? Animals can ingest so much plastic that it makes them feel full even if they are actually starving, because they are not getting the nutrition they need to survive. Sharp plastics can also harm the animals while they are swallowing.

This is not only an issue for our marine life, it's an issue for our health. A study by Dr. Chelsea Rochman of the University of Toronto found that one in four fish that are being sold for our consumption have microplastics in their stomachs. This study was done on the coast of California and on the opposite side of the Pacific Ocean in Indonesia. Take a moment to think about that: A toxic man-made material -- plastic -- is coming back to us on our dinner plates, globally. Dr. Rochman also found microplastics in one in three shellfish. We consume shellfish whole, plastic included. That's right. We are eating plastic.⁹

If you're thinking, "this doesn't impact me, I don't eat seafood", think again. These microplastics are also getting into our tap water and sea salt. There are many ways that we are impacted by plastics, so how can we prevent these issues?

What can we do?

The most obvious and easy solution is: **Don't buy nor eat seafood caught through industrialized, unsustainable fishing practices.**

If you live in a place where seafood is an important staple in your diet, ensure that the fish you eat is sustainably- and locally-caught. Fish for the seafood yourself, or, if you buy seafood, go directly to the fisherman after you've determined that they use sustainable fishing practices. You can ask them directly how they catch the seafood they sell. Be wary of imported fish – often it is caught through industrialized practices.

⁹ Rochman, Chelsea M., et al. "Anthropogenic Debris in Seafood: Plastic Debris and Fibers from Textiles in Fish and Bivalves Sold for Human Consumption", Nature News, Nature Publishing Group, 24 Sept. 2015, www.nature.com/articles/srep14340.

If seafood isn't a main staple in your community's, society's or culture's diet, then try giving marine life a break and just don't buy it.

By reading this paper you have worked to educate yourself about the impact we are having on the oceans. Now that you know about the impacts of the seafood industry, share your knowledge with your friends and family. Share this blog to spread the word! Be brave, pick up a microphone, and present about the impacts of the industrialized and unsustainable seafood industry to communities and policy makers.



Photo above: Heir Cambria, at Whalefest 2018, presenting about the detriments of microplastics in our oceans and in our bodies. **Photo below:** Heir Charley testifying before a Senate Committee regarding banning gill net fishing in California. Thereafter the Committee passed the bill to ban the unsustainable fishing practice, and then the bill went on to become law!



To further the health of our oceans we need to rethink fishing practices and the seafood we eat. We can all make changes in our everyday life to improve our ocean's health. Join us in protecting our planet for us and for future generations.

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