FINFISH AQUACULTURE: A FALSE SOLUTION TO OVERFISHING

FISH ARE A VITAL resource to countless communities around the world. Approximately three billion people worldwide rely on fish as a source of protein,[1] and the fisheries that provide them support the livelihood of over 10% of the world's population.[2] As our population continues to grow each year, more and more fish are needed to feed the world. This results in the practice of overfishing, where so many fish are caught that the remaining population cannot reproduce fast enough to replace them. Overfishing is one of the largest crises plaguing the world's oceans, decimating fish stocks[3] and destroying vulnerable habitat like coral reefs.[4]

Many tout aquaculture—the farming of finfish or shellfish in pens in oceans and other bodies of water—as a potential solution to reduce the burdens of overfishing. In actuality, industrial aquaculture has intensified the depletion of our ocean resources, added new threats to our marine ecosystems and wildlife, and created new risks to human health and the environment—all to the detriment of traditional fishing economies and the public.

The rapid increase in demand for fish and fish products has outpaced our regulatory agencies' ability to manage emerging environmental and human health threats from the aquaculture industry. Center for Food Safety (CFS) is proud to be the largest national nonprofit litigating on aquaculture issues and is currently fighting for stronger regulation and better management of this unsustainable and polluting practice.

POLLUTION CAUSED BY AQUACULTURE

Just like factory farms on land, aquaculture operations are large sources of pollution with little regulation in place to keep their discharge in check. A major source of concern in aquaculture facilities is nutrient pollution, where overfeeding is pervasive, with up to 50% of fish feed escaping to the surrounding water.[5] This uneaten fish feed, along with fish excrement, decomposing fish, and other organic waste from the facilities permeate the marine environment, leading to an abundance of nutrients in the ecosystem. This abundance of nutrients leads to a myriad of issues,[6] such as:

- **Eutrophication**, where the excessive nutrients trigger a sudden burst of plant growth, and hypoxia, where the resulting lack of oxygen leads to death of marine life.
- **Toxic algal blooms**, which thrive on these excess nutrients and can harm surrounding marine life.
- **Deteriorating water quality** due to increased particulates in the environment.

Nutrients are not the only polluting byproduct of aquaculture facilities. Various pesticides and other toxic chemicals, like formaldehyde, are also used to keep fish healthy and enclosures clean. Of course, these substances do not stay in the enclosures, and escape into the surrounding water. Once in the environment, these chemicals can harm all sorts of nontarget species, from fish, to seagrass, to birds.[7] One study of formaldehyde use in aquaculture facilities in Canada found that all analyzed samples contained enough formaldehyde to pose a potential risk to aquatic life, and warned of adverse chronic impacts resulting from this exposure.[8] Clearly, stronger regulation and oversight are needed to severely limit the amount of pollutants discharged from these facilities in order to protect the surrounding ecosystem.

HARMS TO NATIVE AND ENDANGERED SPECIES

Aside from the various pollutants they discharge, aquaculture facilities can harm native and endangered species in the local ecosystem in a number of ways. Arguably the most alarming of these harms is fish escapes. Farmed fish will inevitably escape their aquaculture enclosures into the surrounding environment in many ways: net deterioration over time, equipment failure, boat traffic, weather events like storms or strong currents, breaches from predator attacks, and more. The scale of these escapes is massive—over 24 million fish have escaped worldwide in the two decades from 1994-2014.[9] In some instances, close to a million fish have escaped in one event. These farmed fish are often non-native and are hosts to a number of pathogens and parasites which can be spread to wild populations. Non-native fish will also outcompete native species for food and mates, causing further decline in vulnerable populations and decreasing species diversity. For a more in-depth dive into fish escapes and their consequences, see our 2014 report.[10]

To keep the farmed fish healthy and to counteract the spread of disease, antibiotics are used as a preventative measure similarly to how they are used in terrestrial farming. Studies estimate that up to 80% of applied antibiotics are lost to the surrounding environment, where they may react with other chemicals or accumulate in sediment, causing harm to the ecosystem.[11] This overuse of antibiotics can also lead to "superbugs," or highly resistant bacteria, which become harder and harder to treat and thus require the use of evermore antibiotics. These antibiotic-resistant strains can then go on to infect surrounding marine life. Antibiotics also accumulate in fish tissues to be ingested by other animals and people who consume them.

Finally, surrounding populations of marine wildlife are affected by the operations of aquaculture facilities themselves. The construction, noise, light, nets, vessel traffic, and general commotion of these operations can lead to stress of native populations which has the potential to alter their reproductive behavior.[12] This is especially concerning for native populations of endangered fish or other endangered marine animals.

Industrial aquaculture has intensified the depletion of our ocean resources.

CFS'S RECENT VICTORIES

CFS has achieved several critical victories in our efforts to protect marine ecosystems from polluting aquaculture facilities. This includes a court victory prohibiting offshore aquaculture in the Gulf of Mexico (2020) and requiring further environmental review of a permit for the first-ever industrial aquaculture facility in federal waters due to a violation of the Clean Water Act. Currently, CFS is legally challenging the U.S. Army Corps of Engineers' issuance of a nationwide permit authorizing finfish aquaculture activity in order to stop additional aquaculture operations before they are constructed. This permitting system is in response to a Trump-era issued Executive Order which allows for the rapid advancement of marine aquaculture facilities while skirting many of the environmental reviews required for their approval. CFS has created a timeline of some of our most recent finfish aquaculture work.

While the aquaculture industry promises to combat the ills of overfishing, in actuality it adds further burdens to the marine environment and harms to the animals which inhabit it. There is a critical need to protect marine life, public health, and our oceans from the effects of industrial aquaculture. **Join us in our fight to end the polluting practices of this rapidly-expanding industry.**