Introduction

Maine’s coastal way of life, its economy, and the natural beauty that draws millions to the state every year are all under threat. In 2021, a Norwegian-based company named American Aquafarms proposed to build one of the largest marine salmon aquaculture projects in the world in Maine. If ever approved, the massive fish farm would be located just off the coast of Acadia National Park.

After public outcry, the state government rejected American Aquafarms’ permit applications, but the situation revealed a glaring lack of protections against similar pursuits in the future. Maine’s current regulations leave the state vulnerable to large-scale industrial aquaculture projects that would upend the very things that make it a beloved home and destination: its unique scenic splendor and ecological importance, its deep and rich fishing traditions, and the coastal economy that depends on both.

To protect the future of Maine, the state must establish clear limits on the size of marine fish farms, including the total amount of fish by weight (or biomass), and the density of fish in a farm. By setting limits on biomass and stocking density, Maine can prevent monster fish farms from even being considered in its waters.
Finfish Farming: A Risky Endeavor

Fish farms in the ocean are inherently risky. Aquaculture for finfish like Atlantic salmon can devastate seafloor habitats and nearby waters.¹ These farms often use vast amounts of pesticides and chemicals to fend off disease and parasites.² Most farmed finfish species, including salmon, are carnivores, and feed for farmed finfish often includes fishmeal and fish oil from wild marine fisheries. So finfish aquaculture can potentially contribute to overfishing and increased pressure on wild fish populations.³ Fish waste, as well as uneaten feed, introduces nutrient pollution, including nitrogen and phosphorus, which can lead to harmful algal blooms.

Accidents can lead to other adverse outcomes, such as mass fish die-offs, escapes, and sea lice outbreaks, all of which have been reported around the world. Low oxygen events have suffocated fish by the hundreds of thousands. Storms and negligence have resulted in massive escapes of sometimes non-native fish into local ecosystems. And conditions at salmon farms are often ripe for outbreaks of parasitic sea lice, which can even spread to wild fish populations outside the pens.

None of these problems can be guaranteed to be contained within the farm. Intentional or accidental discharge of waste, disease, parasites, chemicals, and the escaped fish themselves can wreak havoc on surrounding ecosystems.⁴

And, of course, the bigger the farm, the bigger the potential problems.

Unlike finfish farming, properly managed shellfish and kelp farming can make the ocean healthier. Oyster and mussel farms remove excess nitrogen from the water column through filter feeding,⁵ and kelp farms can absorb agricultural runoff.⁶
The health, abundance, and beauty of Maine’s coasts are integral to the state’s economy. In 2021, Maine’s fisheries brought in $890 million in revenue — $730 million was from lobster catch alone. More than 4 million visits to Acadia National Park in 2021 made it the sixth-most visited national park in the United States and generated $702 million in economic output that year.

Established aquaculture operations contribute to the economy as well. Maine currently hosts scores of aquaculture projects, including oysters, mussels, kelp, salmon, and other finfish, which together brought in $72 million in 2021. Small-scale, restorative aquaculture of shellfish and kelp can benefit the surrounding ecosystems, but marine finfish aquaculture is riskier and dirtier, and warrants careful oversight and clear, unambiguous regulation.

Maine does not have clear limits on the size and scale of marine aquaculture. The state’s 24 existing marine finfish farming operations are permitted to be quite large, as compared with those in Norway and other regions. However, the operation proposed by American Aquafarms would produce more salmon per year than all 24 existing salmon farms in Maine combined.
American Aquafarms’ Disastrous Proposal Showcases Maine’s Vulnerability

American Aquafarms proposed an industrial salmon farm in Frenchman Bay, right next to Acadia National Park. This massive fish farm would pollute the bay and displace fishermen and lobstermen. We must protect our coast from projects like American Aquafarms that have no place in Maine’s waters.

Scale

If allowed, this would be the largest ocean-pen salmon farm in North America, covering a surface area the size of 15 football fields across two sites.

30 SALMON PENS
Two sites would house 15 salmon pens each with up to 742,000 fish per pen.

30,000 METRIC TONS
This farm would produce over 30,000 metric tons of salmon per year, making it one of the largest ocean-pen salmon farms in the world.
POLLUTION

Light, noise, and air pollution would turn a cherished oasis into something more resembling an industrial site.

4.1 BILLION GALLONS OF POLLUTED WASTEWATER PER DAY.

That's enough to fill four Olympic-sized swimming pools every minute.

100% OF THE DISSOLVED NUTRIENT WASTE WOULD BE PUMPED FROM THE PENS INTO THE BAY, INCLUDING LARGE AMOUNTS OF NITROGEN.
The farm would come within a half mile offshore of Acadia National Park.

The sites would displace the fishermen and lobstermen who currently work those waters. The farm’s pollution over time could impact local species and threaten Frenchman Bay’s fragile ecosystem.
In 2021, a Norway-based company called American Aquafarms submitted permit applications for two Atlantic salmon aquaculture sites in Frenchman Bay, Maine, to be placed within a half mile offshore of Acadia National Park. The company proposed 15 net pens per site, totaling more than 120 acres of leased waters with industrial structures covering 20 acres on the surface — roughly the size of 15 football fields. This would be one of the largest reported near-shore marine salmon aquaculture operations in the world, producing 30,000 metric tons — 1,500 dump trucks’-worth — of salmon every year.

The massive industrial project would bring noise, light, air, and water pollution to an area famous for its natural beauty and tranquility. According to the permit applications, the farm would discharge 4.1 billion gallons of wastewater polluted with dissolved nitrogen and phosphorous every day. That is enough wastewater to fill four Olympic-sized swimming pools every minute. Solid waste would be transported across the bay on barges multiple times per week. The surface footprint would displace lobstering and fishing that has been established in the area for generations, and the increased boat traffic would further disrupt existing fisheries.

As the public learned about the proposal, opposition grew among local residents, scientists, business owners, and politicians. The Maine Department of Environmental Protection held a two-hour public meeting that drew dozens of comments, ranging from fishermen to conservationists, to small-scale aquaculture farmers, and even the office of the Superintendent of Acadia National Park — all staunchly against the fish farm. Sixty-six percent of voters in Hancock County, where the operation would be located, opposed the project according to a poll commissioned by Oceana. In public statements, both Gov. Janet Mills and former Gov. Paul LePage came out against American Aquafarms’ proposal.

After a months-long review, the Maine Department of Marine Resources (DMR) rejected American Aquafarms’ permit applications due to concerns about the company’s egg sourcing. In the time since its rejection, American Aquafarms has repeatedly indicated that it intends to reapply. The company closed on the purchase of its Gouldsboro salmon processing plant, filed (and later withdrew) a lawsuit against the DMR, and said in an interview with the local newspaper Ellsworth American, “We’re not going anywhere.”

Without clear limits on the size and scale of aquaculture in Maine, anyone can apply for permits to build an industrial operation of similar scale to American Aquafarms. In fact, nothing in Maine’s current regulations will prevent an even bigger and more damaging and disruptive operation from applying for permits. More to the point, the global pressures that motivated American Aquafarms and multiple land-based salmon companies to look at Maine suggest that corporate interest in the state is just getting started.
Global Context: Salmon Aquaculture Around the World

**Maine is the last state in the U.S. with salmon farms in its waters.**

Global Fish Farming Incidents

Since 2000, there have been several thousand documented finfish farming incidents around the world. Below are some of the more destructive and widely reported incidents from the last several years:

**Washington, USA**

- In 2017, a catastrophic net pen failure at a Cooke Aquaculture farm allowed more than 250,000 non-native Atlantic salmon to escape. The state quickly announced a phase-out of non-native fish farming (to protect native fish populations) and then, in 2022, banned finfish farming altogether in state-controlled waters. This leaves Maine as the only state left in the United States with marine salmon farms in its waters.

**Maine, USA**

- In August 2021, more than 115,000 Atlantic salmon died in Cooke Aquaculture's net pens near Black Island from low oxygen levels.

- In 2019, the state ordered Cooke Aquaculture to pay $156,000 for multiple violations, including breaching its permitted stocking density limits.
Canada

- The aquaculture company Cermaq halted a trial of a technology similar to the system proposed by American Aquafarms in Frenchman Bay. The trial ended due to water quality issues leading to fish mortality, raising serious questions about the technology.\(^\text{34}\)

- In Eastern Canada, an estimated 2.6 million salmon died across 10 sites run by Northern Harvest Sea Farms in 2019, likely due to elevated water temperatures and low oxygen conditions.\(^\text{35}\)

- In Western Canada, over 350 salmon mortality events were reported at marine finfish farms in British Columbia from 2018 to 2021.\(^\text{36}\)

Chile

- In 2016, massive algal blooms and warmer waters killed an estimated 27 million salmon and trout.\(^\text{37}\)

- In 2013, a farm run by the company AquaChile lost nearly 788,000 fish in one of the world's largest reported Atlantic salmon escape events.\(^\text{38}\)

Norway

- In 2019, an algal bloom suffocated an estimated 8 million farmed Atlantic salmon over the course of a few weeks. The event impacted at least nine salmon companies, with losses as high as 40,000 metric tons of salmon.\(^\text{39}\)

Australia

- A virus outbreak killed 1.35 million salmon in Macquarie Harbour in Tasmania over the course of just six months from 2017 to 2018. Tasmania's Environment Protection Authority responded to this mass mortality event with a significant reduction in the Macquarie Harbour's regional biomass limit to allow for environmental recovery.\(^\text{40}\)

- In 2020, roughly 50,000 salmon escaped when a net pen caught fire in the D'Entrecasteaux Channel near Bruny Island. The following week, up to 130,000 salmon escaped from a farm in Storm Bay through a tear in the net pen.\(^\text{41}\)

Throughout the world, often in response to disasters, finfish farming countries have established limits on pesticide and antibiotic use, pollution discharge, and scale and density of farming operations to prevent escapes, die-offs, and sea lice outbreaks. Some governments — like Washington state, which recently joined its U.S. neighbors Alaska, Oregon, and California — have outright banned marine salmon farming in state-controlled waters due to the threat it poses to local ecosystems.\(^\text{42}\) Many of these safeguards were enacted after damage was already done.
How Maine’s Regulations Stack Up

The best way to protect against overly large projects threatening coastal ecosystems and economies is to limit their size in the first place. Compare Norway’s and Chile’s limitations with Maine’s:

**Norway** is the world’s No. 1 producer of marine-farmed salmon. Since 2005, most of Norway has biomass limits of 780 metric tons per license for most projects, with 1-6 licenses generally allowed per site. Two far north counties have limits at 945 metric tons due to frigid water temperatures.43,44,48

**Chile**, the world’s No. 2 producer of marine-farmed salmon, has a 17 kg/m³ pen stocking density limit.45

**Maine** has no statutory limits on biomass or stocking density. Maine has 24 existing salmon farms, all owned by the company Cooke Aquaculture. The highest reported biomass (salmon by weight) in Maine is 5,724 metric tons. The 24 existing farms have density limits of 30 kg/m³.46

**American Aquafarms** proposed two sites, each measuring 9,200 metric tons in biomass (18,400 total metric tons) and up to 40 kg/m³ in stocking density.47 This farm would be roughly double the limits for such farms in Norway and more than twice as dense as the legal limit in Chile, and far larger and denser than anything in Maine today.
A Wake-Up Call

If ever approved, a project like American Aquafarms would fundamentally change Maine's coastal way of life. Waste, noise and light pollution, displacement of locals from their traditional fishing grounds, the constant threat of a spill or escape, and the visual blight in full view of Acadia National Park all would become a “new normal.”

This approval would set a precedent. American Aquafarms has made clear it will be back. And nothing in Maine’s current regulatory framework will prevent its return, nor the consideration of similar projects from other companies. These projects could be just as big, if not bigger, and could encroach upon any of Maine’s coastal regions.

Maine should look to Norway and Chile — the top two producers of farmed salmon in the world — for examples on how to limit the scale of salmon farms. Norway’s biomass limits and 25 kg/m$^3$ stocking density limit demonstrate caution. As does Chile’s relatively strict pen stocking density limit of 17 kg/m$^3$. These standards help prevent catastrophes. Maine’s existing allowance of limitless biomass and stocking density applications would not meet the standards of Chile or Norway, and that must be considered in developing limits. The most important thing is for Maine to enact clear limits before more oversized applications flow in.

The application for American Aquafarms’ monster fish farm should be the last of its kind to ever be considered in Maine. But as of now, the door remains open to this threat. To ensure Maine preserves its economy, its coastal ecosystems, and its way of life, the state should enact clear limits to the biomass and stocking density of marine finfish farms.

To sign Oceana’s petition to protect Maine from monster fish farms, please visit Oceana.org/SaveMaine.
References


Preventing Monster Fish Farms in Maine


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Oceana is the largest international advocacy organization dedicated solely to ocean conservation. Oceana is rebuilding abundant and biodiverse oceans by winning science-based policies in countries that control one-quarter of the world’s wild fish catch. With more than 275 victories that stop overfishing, habitat destruction, oil and plastic pollution, and the killing of threatened species like turtles, whales, and sharks, Oceana’s campaigns are delivering results. A restored ocean means that 1 billion people can enjoy a healthy seafood meal every day, forever. Together, we can save the oceans and help feed the world. Visit Oceana.org to learn more.

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