Testimony of the Atlantic Salmon Federation on
LD 1951, An Act Regarding Marine Finfish Aquaculture
May 25, 2023

Senator Reny, Representative Hepler, and Honorable Members of the Joint Standing Committee on Marine Resources:

My name is John Burrows, and I am the Executive Director of U.S. Operations for the Atlantic Salmon Federation (ASF). ASF is an international, science-based non-profit organization dedicated to the conservation and restoration of wild Atlantic salmon and their ecosystems. I represent more than 25,000 members and volunteers across eastern North America, including a dozen local organizations that are part of our Maine Council that work on river and fisheries conservation and restoration across Maine. ASF is a global leader in Atlantic salmon science, and we are a national leader here in Maine in our work to restore access to our rivers, streams, and lakes for Atlantic salmon, alewives, American eel, American shad, and other native sea-run fish species. Our restoration work over the last 25 years has led directly to the restoration of more than 10 million river herring returning to our rivers each spring.

ASF is testifying in support of LD 1951. We believe that this legislation would set a very reasonable stocking density limit on the existing open net-pen salmon farming industry that decreases some of the risks to wild Atlantic salmon and the environment. The proposed stocking density limit of 22 kg/m3 is based on solid science and would put Maine in-line with other jurisdictions. In addition, it looks like a limit of 22 kg/m3 would be easily achievable by industry with little impact on production.

On the issue of biomass, we recognize that the 780 metric ton limit proposed in the legislation is a fraction of what the State currently allows and is a complete non-starter for industry, the Department of Marine Resources, and likely for this Committee. We hope that this can be a starting point for discussion about what the State has allowed in the past and what is reasonable to allow in the future. Maine has permitted a lot of relatively large salmon farms over the last two decades and has concentrated them in a few areas along the coast, allowing for the potential of having incredibly high biomass levels of farmed salmon in some places, particularly Cobscook and Machias Bays. We need to ask ourselves if the impacts and risks from extremely high numbers of fish in these and other areas are acceptable. In addition, like with stocking density, all the publicly available information regarding actual biomass levels at Maine's salmon farms indicates that the industry is operating at levels far lower than has been permitted.

Impacts of Salmon Aquaculture on Wild Salmon

As practiced for the last 50 years, salmon farming has caused massive devastation to wild Atlantic salmon across North America and Europe. The main impacts stem from escaped domesticated salmon (leading to genetic introgression and competition with wild salmon), sea lice, and various diseases. The widespread impacts on water quality, coastal ecosystems, and traditional fisheries – particularly lobster –

are also well documented. The limits proposed in LD 1951 would decrease risks associated with sea lice and disease.

Sea lice are a type of parasite that attaches to salmonids and feeds on tissue and blood, and they are one of the most significant threats to wild salmon from farmed salmon across the globe. Sea lice cause deep erosions in salmon, which create chronic stress in salmon and makes them highly susceptible to bacteria, viruses, and fungi. Sea lice can also cause direct mortality of salmon, particularly in the smolt life stage where salmon are leaving freshwater and migrating to the ocean.

There are many common infectious diseases found in the salmon farming industry here in eastern North America caused by bacteria (e.g., bacterial kidney disease, salmon ulcerative tenacibaculosis) and viruses (e.g., infectious salmon anemia, infectious hematopoietic necrosis virus). These diseases, like sea lice, are more likely to develop and spread between farmed salmon within and between pens – and then spread to wild fish – when farmed fish are kept at high densities in pens.

There is simply no way to make open net-pen salmon farming safe for wild salmon or the environment. We find the risks and impacts of open net-pen salmon farming completely unacceptable, and we continue to advocate that the industry move completely to closed containment systems – be it on land or on the water. Having limits on stocking density and total biomass are ways that can reduce the impacts of salmon farming on wild fish and the environment.

The U.S. has made international commitments to reduce the impacts of open net-pen salmon farms on wild Atlantic salmon through the North Atlantic Salmon Conservation Organization (NASCO), an international organization established by the Convention for the Conservation of Salmon in the North Atlantic Ocean. Establishing limits on stocking density and total biomass will help the U.S. to meet its international obligations to NASCO since these parameters relate directly to minimizing the risk of outbreaks of disease and parasites in farmed that can significantly impact wild salmon.

Stocking Density

The stocking density limit of 22 kg/m3 proposed by this legislation is not radical. It is in line with the upper limits required or recommended by other governments, as well as industry association best practices, third party certification programs, and even some of the world's largest salmon aquaculture companies (e.g., MOWI and Cermaq). Below is a table showing recommend and/or required stocking densities for salmon farms in several countries. Maine's default stocking density of 30 kg/m3 is the highest in the world for open net-pen salmon farms.

Stocking Densities for Atlantic Salmon Farms

Jurisdiction	Stocking Density (kg/m3)	Description
Canada*	10 to 25	Industry standard - Code of Practice, Canadian Aquaculture Industry Association

Maine*	30	Maine DMR Standard Lease
Scotland*	15 to 20	Regulatory limit and Industry standard - Code of Good Practice for Scottish Finfish Aquaculture
Chile*	17	Regulatory limit
Norway	25	Regulatory limit
Australia	25	Industry standard
New Zealand	25	Industry standard

**Cooke Aquaculture operates Atlantic salmon farms in these jurisdictions*

Based on information available for 13 lease sites from January 2018 through March 2023, Cooke Aquaculture maintained an average stocking density of 9.85 kg/m3 across all their pens. They maintained a stocking density of 22 kg/m3 or less 95.07% of the time and a stocking density of 25 kg/m3 or less 98.73% of the time.

In Canada, where Cooke Aquaculture is headquartered, the Canadian Aquaculture Industry Alliance has developed an (industry-led) code of practice for salmon farms, which recommends that the *maximum* stocking density (referred to as biodensity) range between approximately 10–25 kg/m3 in net pens.

Cermaq, a large global salmon producer with operations in Norway, Chile, and Canada, maintains a normal stocking density of 20 kg/m3 at all of its sites in Canada. Meanwhile, Mowi, which is far and away the world's largest producer of farmed Atlantic salmon, has a universal salmon welfare policy that covers all their salmon farm sites in every country they operate in (Norway, Scotland, Canada, Chile, Ireland, and the Faroe Islands):

> *Our stocking densities, throughout production, are well below the regulated maximum permitted stocking density at sea of 25 kg/m3. This ensures fish have ample space to swim and express natural behaviour, as our net pens contain minimum 97.5% water and only 2.5% fish as a maximum. Our actual stocking densities across our seawater sites are consistently and significantly lower, with an average monthly standing stocking density of approximately 8kg/m3 in Mowi Group.*

Finally, the Global Seafood Alliance (GSA), an international nongovernmental organization dedicated to advancing responsible seafood practices through education, advocacy, and third-party assurances, has a Best Aquaculture Practices (BAP) certification program for salmon farms. GSA's BAP certification for salmon farms requires a stocking density of no more than 25 kilograms per cubic meter, except in situations where there are indications of "good welfare, such as low mortality, and if water quality is considered good, which would normally mean water temperature below 12 degrees C (or 53.6 degrees F), dissolved oxygen above 80 percent saturation, and little or no harmful algae present," in which case densities can be 5% higher.

Clearly, Maine's standard stocking density limit of 30 kg/m3 is a significant outlier.

Biomass

The issue of maximum allowable biomass is certainly less straightforward than stocking density. Various jurisdictions have taken different approaches when it comes to biomass. The best way to determine this is to look at a specific geographic area – an individual bay – and assess specific environmental and physical characteristics of that area and set a total biomass for the entire region with ease lease site getting a portion of the total biomass.

The biomass limit proposed in this bill is indeed much lower than what the State has permitted in the past. The question is how big is too big when it comes to impacts to water quality, traditional fisheries, and our coastal ecosystems? The American Aquafarms proposal for two massive farms in Frenchman Bay with a combined 18,200 metric ton biomass has almost universally been viewed as way too big for Maine. We agree. We believe strongly that some parts of our coast, like Frenchman Bay and Penobscot Bay, should be completely free of salmon and other finfish farms. And in those areas where the salmon farming industry is currently concentrated, we need to ask whether the size of those existing farms is appropriate given the changing environmental conditions associated with rapid warming of water temperatures in the Gulf of Maine and ongoing impacts to coastal ecosystems and traditional fisheries.

As water temperature increases, there is less oxygen in the water and large concentrations of farmed salmon will be increasingly susceptible to mass die-offs. This has happened with increasing frequency in North America in recent years and is only going to increase in likelihood in the future, particularly in the Gulf of Maine. This exact scenario occurred in Maine at a Cooke salmon farm near Black Island in August 2021 when more than 100,000 salmon died after experiencing "uncommonly low oxygen levels in the cages" according to the company.

And in September 2019, there was a massive die-off of more than 2.6 million salmon at several sites owned by Northern Harvest off the southwestern coast of Newfoundland. The company blamed an extended period of ocean temperatures that reached 70 degrees F as the cause of the mass mortality event, but it was also determined that the of pesticides to fight parasites had stressed the salmon before the arrival of the warm water and that algae blooms in the bays had further depleted oxygen levels. Clean-up of the dead salmon took weeks and many of the salmon carcasses "liquified," turning into an oily pink sludge that covered the seafloor and fouled miles of shoreline for months. Northern Harvest may seem like an extreme, but Maine allows for similarly large numbers of farmed salmon in some of our bays and our waters are rapidly warming.

There are currently 25 salmon farms that have been permitted in Maine waters. Detailed information about biomass is available for 13 of these sites and it ranges from 2,862 metric tons to 5,724 metric tons, with an average of 4,017 metric tons. That average biomass places a typical open net-pen salmon farm in Maine at the high-end of what is allowed in many places around the world. This in and of itself may or may not be concerning, but Maine has permitted multiple sites in our bays and the cumulative size – and cumulative impacts – of all these sites in any given area of the coast needs to be considered.

For example, there are currently 13 lease sites in Cobscook Bay. For the 3 lease sites where information is available, the total combined biomass is 9,922 metric tons. Even if all the other sites are licensed at just 2,000 metric tons – 862 metric tons less than the lowest limit for sites where information is available – the State of Maine is allowing up to 30,000 metric tons of farmed salmon in Cobscook. In Machias Bay, the 4 lease sites (out of 6 total) where information is available have a total combined maximum biomass of 18,675 metric tons. Add in the other sites, and the State is over 20,000 metric tons in Machias Bay. These levels of biomass equate to many millions of fish permitted to be in some of our bays at any one time.

If 18,200 metric tons of salmon in the water was unacceptable for Frenchman Bay, are 20,000 or 30,000 metric tons OK for Cobscook or Machias Bays?

In practice, actual biomass levels – like stocking densities – appear to be far lower than the limits permitted by the State in these places. But the reality is that the State has said that it is acceptable to have millions upon millions of farmed salmon – and the associated amounts of untreated fish waste – in some of our bays. It is reasonable for us to reconsider this.

In practice, our existing salmon farms rarely surpass having more than 2,500 metric tons of fish in the water at any time. Between January 2018 and March 2023, Cooke Aquaculture had an average biomass of just over 1,000 metric tons at their farms in Maine. They only exceeded 2,500 metric tons 5.7% of the time and only exceeded 3,000 metric tons 1.9% of the time.

In addition, nearly half of the salmon lease sites in Maine have been vacant for the last 5 years. I cannot speak as to the reasons for this, but when you take this into account along with the actual biomass levels, it becomes clear that the salmon farming industry can exist with a biomass level that's far less than what is currently allowed with little impact on production and substantially less negative impact on wild fisheries, water quality, and the environment.

A specific biomass number per salmon farm may indeed be higher than the 780 metric tons proposed in this bill, but it is certainly far less than the 4,000 metric tons allowed on average today per farm. As such, the argument that establishing reasonable limits on stocking density and biomass will have severe economic consequences for the industry simply does not hold water.

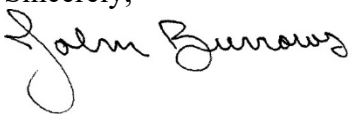
Cooke Aquaculture has 56 licensed saltwater salmon farms in Scotland. The average maximum allowed biomass for these sites is 1,253 metric tons. Cooke has one site license for 3,850 metric tons, but all other sites are at or below 2,500 metric tons. 55% (31 of 56) of these licensed farms are at or below 1,000 metric tons. Scotland is largely viewed as having a weak regulatory system, yet stocking densities there do not exceed 20 kg/m3 and salmon farms are typically one-quarter to one-half the size of Maine farms in terms of biomass.

In conclusion, ASF believes that establishing limits on stocking density and total biomass within State law is prudent and reasonable. Numerous other jurisdictions, as well as other salmon farming companies and industry association groups, have set or recommended limits that are lower than what Maine currently allows.

We strongly encourage the Committee to adopt the stocking density limit of 22 kg/m3 that is proposed within this legislation. We also hope that the information we have provided on total biomass will begin a conversation about the appropriate size of salmon farms in Maine waters. Reasonable limits on biomass, comparable to those in other places, can be readily achieved by industry in Maine with negligible impact on production and a real reduction in the risk and impacts on wild fish, traditional fisheries, and the environment.

Thank you for the opportunity to provide testimony on this legislation.

Sincerely,



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