



Aquaculture Management Offices
Fisheries and Oceans Canada
200 Kent St., Ottawa, ON
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December 20th, 2019

Re: Preface to recommendations for Canada's federal *Aquaculture Act*

To Whom It May Concern,

We thank you for this opportunity to comment on the development of Canada's first-ever federal *Aquaculture Act*. In the accompanying submission, we offer legislative and regulatory recommendations aimed at preserving the integrity of aquatic ecosystems, marine biodiversity and coastal livelihoods across the country. Our recommendations are grounded in cumulative decades of experience working with Indigenous peoples and Canadian communities to keep marine and freshwater ecosystems healthy, in support of the people who rely on them most. They are also based on and consistent with Canada's international commitments towards sustainable development and the conservation of biodiversity, as well as independent scientific and regulatory inquiries investigating the relationship between aquaculture and the aquatic environment at national and regional scales. These markers act as a guiding light and provide a solid foundation upon which to build a regulatory process capable of preserving marine and freshwater habitats across the country. An *Aquaculture Act* based on the input we provide would continue to signal Canada's movement towards progressive environmental leadership at the international level.

Prior to providing recommendations on specific sections of the proposed Act, we raise a series of concerns surrounding the motivation and need for an *Aquaculture Act* in Canada. As protection of fish and fish habitat already exist under the *Fisheries Act*, and zoning and marine spatial planning powers exist under Canada's *Oceans Act*, we are left asking some fundamental questions, including: what is the purpose of a new *Aquaculture Act*, and what is the likelihood that a Canadian *Aquaculture Act* will actually *improve* protections for aquatic ecosystems and species?

Today, aquaculture is a regulated industry because of the significant risk it poses to the environment, including fish, fish habitat and marine biodiversity. As reflected in the considered comments of many experts in the field, existing



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aquaculture regulation is frequently ineffective because the regulatory framework is based on mitigation, not prevention. Few aquaculture operations are subject to any form of robust assessment prior to licensing and once in place regulators rely primarily on industry self-reporting, stepping in only when a problem is brought to their attention. DFO’s mandate to transition away from open net-pen salmon operations in coastal British Columbia waters by 2025 is an important first step towards preventing harm to wild salmon and the marine environment. However, this commitment has not been extended to Canada’s east coast, where many of the same problems and others plague the industry there. These inconsistencies raise important and unanswered questions about the scope and intent of the *Aquaculture Act*, and make informed recommendations exceedingly difficult as the options are many and varied across divergent jurisdiction circumstances.

The limited information provided by DFO to date suggests that the legislation will seek to achieve conflicting goals such as (1) ‘harnessing growth and opportunity’ in the sector by promoting aquaculture in all forms; while at the same time (2) protecting marine biodiversity. As found by Justice Cohen in the report and recommendations of the *Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River*, the Royal Society of Canada Expert Panel report on sustaining Canada’s marine biodiversity and others, the Minister of Fisheries and Oceans, as the regulator of the aquaculture industry, should not be tasked with the promotion of the industry as well.

A secondary goal of the proposed law, it would appear, is to address outstanding jurisdictional issues around the regulation and management of aquaculture and to co-locate federal authority for aquaculture regulation into one statute. This statement neglects any insight into the approach DFO intends to take with respect to current jurisdictional regimes responsible for the regulation of aquaculture across Canadian provinces.

To avoid these potentially serious conflicts and confusions, to uphold the trust of the Canadian public, and to ensure that Fisheries and Oceans Canada can maintain an uncaptured regulatory authority at the heart of the proposed *Aquaculture Act*, **we recommend:**

1. that the proposed federal aquaculture statute and regulations encompass, to the extent possible, the federal regulatory framework for all aspects of any aquaculture operation in Canadian waters; and



2. that the focus of the *Aquaculture Act* be the effective regulation of aquaculture to ensure the protection of wild fisheries, fish, fish habitat and marine biodiversity. The goals and purposes of the statute should expressly avoid the inclusion of any responsibilities towards the promotion of aquaculture falling to federal regulators.

Without assurance that these two fundamental notions will act as checks for any *Aquaculture Act* going forward, we remain skeptical that this process can, in fact, contribute positively to biodiversity outcomes in marine and freshwater ecosystems in Canada, or prevent the suite of problems currently plaguing many industrial aquaculture operations in Canadian waters. We hope to see, with these principles in mind, a clear and consistent approach to the regulation of aquaculture across the country.

In the meantime, we look forward to continued discussions with Fisheries and Oceans Canada and partners throughout the process of consultation on an *Aquaculture Act*. We have provided several more detailed recommendations in the accompanying document that we consider foundational to an effective legal and regulatory framework for aquaculture in Canada. We anticipate that our collective input will be thoroughly considered and ultimately reflected in legislation. Given the mandate to continue the development of an *Aquaculture Act*, we request a meeting with relevant parties to further discuss our concerns and recommendations at the soonest possible time as is mutually convenient. We look forward to your response.

Respectfully,

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Atlantic Salmon Federation

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Recommendations for Canada’s federal *Aquaculture Act*

From researchers and organizations working to protect Canada’s aquatic ecosystems and the species upon which these systems depend, the following is meant to provide a series of recommendations for Fisheries and Oceans Canada (DFO) practitioners in the development of Canada’s first ever federal *Aquaculture Act*. We represent a pan-Canadian group of NGOs and hundreds of thousands of supporters united by a common purpose in maintaining the health of Canada’s marine and freshwater environments and protection of wild aquatic species. Our goal in relation to the development of the proposed Aquaculture Act is to ensure that aquaculture legislation in Canada will: (i) support United Nations Sustainable Development Goals (UNSDGs) and other international commitments to which Canada is a signatory; (ii) adhere to global best practices in aquaculture regulation and development; (iii) support the recommendations of independent federal commissions on the science and regulation of aquaculture; and (iv) uphold Canada’s legislative obligations towards the conservation of biodiversity.

Collectively, we share the opinion that a new *Aquaculture Act* in Canada should both disincentivize and regulate strongly to prevent the ecological harms caused by any aquaculture operations in Canadian waters. In this interest, we applaud the DFO mandate to work with partners to transition away from open net-pen salmon in British Columbia by 2025, and re-iterate that the debilitated state of B.C. salmon stocks requires that this work begin immediately. We also support the development of similar provisions for Atlantic Canada, where the federal government is committed to the [restoration of wild salmon populations](#) and the protection of at-risk species, special marine areas, and important commercial fishing grounds that support thousands of livelihoods. We seek to ensure a just transition for Canadian workers in the open net-pen aquaculture industry on both coastlines, and we urge federal leadership in this regard as we transition towards land-based and closed containment innovations to ensure sustainable aquaculture development across the country.

This document contains: **(1)** a list of outstanding questions pertaining to the proposed *Aquaculture Act* for consideration; **(2)** rationale and recommendations on transitioning the open net-pen industry in Canada; **(3)** recommendations to eliminate jurisdictional conflicts between the regulation and promotion of aquaculture; **(4)** and specific recommendations for sections of an *Aquaculture Act*.

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1. Clarifying Questions Relating to the Development of an Aquaculture Act

Consultation documents on the proposed *Aquaculture Act* to date have not yet been entirely clear about the purpose or scope of the proposed legislation. During the course of discussion in preparing this submission, many outstanding questions have emerged, the answers to which would greatly enhance our ability to credibly and critically respond to consultation requests. As a primer and a caveat to the recommendations highlighted in the document, these questions are first outlined below:

- Will the *Aquaculture Act* seek to incorporate relevant environmental protection standards from the *Fisheries Act*? For example, would an aquaculture operator seeking to place a pen be required to obtain an authorization for the harmful alteration, disruption or destruction of fish habitat, or will DFO continue the approach taken in by the current Aquaculture Activity Regulations (AARs)?
- Will the AARs be moved under the *Aquaculture Act*?
- Will the Act apply different regulatory approaches to finfish, shellfish and land-based aquaculture?
- Will the Act apply to closed containment facilities or will those be regulated by the province?
- Will the aspects of licensing that relate to the fishery – how many fish in the nets, monitoring of the fish, reporting of escapes, sea lice incidents, use of pesticides, drugs, location of nets, etc. – be a federal responsibility or will the *Aquaculture Act* seek to delegate that authority to the provinces?
- How will the *Aquaculture Act* address the public right to fish? Would the Act enable a general authorization for leaseholders to interfere with the public right of fishing and use a permitting process for leaseholders in provincial waters?
- Will the *Aquaculture Act* seek to address the right to navigation or will the *Canadian Navigable Waters Act* (CNWA) continue to regulate in this regard? Will open net operators be required to get authorization under the CNWA?
- How will the *Aquaculture Act* address management of heat waves and “superchill”?
- How will the *Aquaculture Act* address siting?
- What does the zoning concept look like under *Aquaculture Act*? How would that fit, for example, with the board process in place in Nova Scotia?

- How will the *Aquaculture Act* address leases in areas that are outside of provincial jurisdiction? Would the *Aquaculture Act* seek to cover the federal areas using a federal leasehold system operating next to the provincial lease areas?
- How will the *Aquaculture Act* incorporate public engagement and transparency?

We recognize that some of the above queries will require detailed discussion while others are relatively easily answered. We look forward to an opportunity to discuss these further with DFO staff and partners early in 2020.

2. Transitional Provisions

Aquaculture technology is advancing quickly around the world. We see these advancements as a major opportunity for Canada to be a leader in North America by establishing a robust and ecologically sustainable aquaculture industry. As part of a just transition away from open net-pen aquaculture in Canada, we welcome measures intended to encourage the development of innovative, closed containment and land-based finfish or shellfish aquaculture proposals. This incentivization could establish special provisions for proponents wishing to invest, conduct business and support livelihoods in small coastal communities in Canada, assuming they are willing to abide by the regulatory demands and the principles of inclusion, precaution, and protection of biodiversity, etc., laid out in the following sections.

However, all aquaculture development proposals, regardless of the scope and scale of operation, come with potential impacts to the aquatic environment. As such, we feel that each project proposal should be appropriately assessed by impartial regulators in adherence with regulations aimed at the prevention of harm to wildlife and natural habitat. We urge that any provisions intended to support the development of ecologically sustainable aquaculture projects fall *outside* of the proposed *Aquaculture Act* statute, as we see the only path towards effective aquaculture legislation through a separation of regulatory and promotional responsibilities. This message is referenced throughout this document and we will continue to re-iterate over the course of this Act's ongoing development.

Our submission is accordingly premised upon the assumption that transitional provisions may need to be incorporated in an *Aquaculture Act* for at least some of the B.C. finfish sites, and that a number of those operations will be removed by virtue of other processes before an *Aquaculture Act* could come into effect. Therefore, any suggestions in this submission that relate to the regulation of open net-pen finfish sites do not in any way endorse the continuation of this harmful practice. Our suggestions in this regard refer to the transitional period only, during which we anticipate the continued removal of open net-pens from Pacific waters and the establishment of similar commitments for Atlantic Canada. We maintain that new legislation is incapable of mitigating the adverse impacts of open net operations, and we applaud the Government of Canada in taking steps toward this recognition.

2.1 Transition in British Columbia

In British Columbia, initiatives are already underway to remove open-net salmon farms from the ocean environment. A government-to-government process between the provincial government and the ‘Namgis, Kwikwasut’inuxw Haxwa’mis and Mamalilikulla First Nations [agreed to remove 17 open-net salmon farms in the Broughton Archipelago](#) in an orderly manner. One open net farm has already been removed, another is scheduled for removal in early 2020 and the remaining are scheduled for removal between 2020 and 2023. Several federal parties also made commitments to [continue to implement the recommendations](#) of the *Cohen Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River*, including recommendations 18 and 19¹:

Cohen Commission recommendation 18: If at any time between now and September 30, 2020, the Minister of Fisheries and Oceans determines that net-pen salmon farms in the Discovery Islands (fish health sub-zone 3-2) pose more than a minimal risk of serious harm to the health of migrating Fraser River sockeye salmon, he or she should promptly order that those salmon farms cease operations.

Cohen Commission recommendation 19: On September 30, 2020, the Minister of Fisheries and Oceans should prohibit net-pen salmon farming in the Discovery Islands (fish health sub-zone 3-2) unless he or she is satisfied that such farms pose at most a minimal risk of serious harm to the health of migrating Fraser River sockeye salmon. The Minister’s decision should summarize the information relied on and include detailed reasons. The decision should be published on the Department of Fisheries and Oceans’ website.

Given the government’s commitment to implementing these recommendations, the escalating inability of the industry to control parasitic salmon lice on their farms, and recent science regarding risk of disease that the open net-pen industry poses to wild salmon^{2 3}, the development of the federal *Aquaculture Act* must not impede progress already made, nor future progress, towards the removal of all open net-pen finfish farms.

2.2 Transition in Atlantic Canada

While the DFO mandate to move away from net-pen salmon aquaculture in B.C. did not extend to Atlantic Canada, we see that many of the same problems surrounding sea lice^{4 5 6}, disease^{7 8 9}, escapes

¹ Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River (Canada), & Cohen, B. I. (Eds.). (2012). *The uncertain future of Fraser River sockeye*. Vancouver, B.C.: Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River.

² Mordecai, G. J., Miller, K. M., Di Cicco, E., Schulze, A. D., Kaukinen, K. H., Ming, T. J., ... Suttle, C. A. (2019). Endangered wild salmon infected by newly discovered viruses. *ELife*, 8. <https://doi.org/10.7554/eLife.47615>

³ Morton, A., Routledge, R., Hrushowy, S., Kibenge, M., & Kibenge, F. (2017). The effect of exposure to farmed salmon on piscine orthoreovirus infection and fitness in wild Pacific salmon in British Columbia, Canada. *PLOS ONE*, 12(12), e0188793. <https://doi.org/10.1371/journal.pone.0188793>

⁴ Carr, J., & Whoriskey, F. (2004). Sea lice infestation rates on wild and escaped farmed Atlantic salmon (*Salmo salar* L.) entering the Magaguadavic River, New Brunswick. *Aquaculture Research*, 35(8), 723–729. <https://doi.org/10.1111/j.1365-2109.2004.01094.x>

and interactions with wild Atlantic salmon^{10 11 12}, species at-risk¹³, commercial and non-commercial fish and shellfish populations¹⁴, and ecologically significant habitat¹⁵ plague the industry on the country's east coast as well. Canada's Atlantic provinces face additional in-water challenges attributable to climate-related oceanographic temperature extremes which frequently subject fish to lethal heat waves and so-called "superchills". We recognize the differences in DFO's jurisdictional authority (as currently asserted) over finfish aquaculture on Canada's east and west coasts. However, the Memoranda of Understanding (MOUs) signed between Canada and provincial governments on the east coast do not absolve the federal minister of constitutional duties to protect wild fish, fish habitat and the fisheries resource, nor does it prevent the federal government from asserting its responsibility and authority to implement coastal and marine planning and governance under the *Oceans Act*. Additionally, the commitment to transition away from open net-pens on the west coast appears to be resulting in rapid commercial expansion plans for Atlantic Canada, as evidenced especially in [Nova Scotia](#) and [Newfoundland](#).

We view the continuation and expansion of open net-pen salmon farming as a potential threat and a serious inhibition towards the recovery of wild Atlantic salmon stocks, an initiative to which DFO is committed under [Canada's Wild Atlantic Salmon Conservation Implementation Plan](#) and obligations under the *Fisheries Act* and *Species At-Risk Act* to rebuild federally-listed species. Furthermore, an absence of equitable and transparent decision-making processes for coastal zone planning involving aquaculture operations puts community relations, traditional fisheries and culturally valuable coastal ecosystems at undue risk of harm. As such, we recommend a similar process of transition away from

⁵ Elmoslemany, A., Whyte, S. K., Revie, C. W., & Hammell, K. L. (2013). Sea lice monitoring on Atlantic salmon farms in New Brunswick, Canada: comparing audit and farm staff counts. *Journal of Fish Diseases*, 36(3), 241–247. <https://doi.org/10.1111/jfd.12051>

⁶ Rittenhouse, M. A., Revie, C. W., & Hurford, A. (2016). A model for sea lice (*Lepeophtheirus salmonis*) dynamics in a seasonally changing environment. *Epidemics*, 16, 8–16. <https://doi.org/10.1016/j.epidem.2016.03.003>

⁷ Di Cicco, E., Ferguson, H. W., Kaukinen, K. H., Schulze, A. D., Li, S., Tabata, A., ... Miller, K. M. (2018). The same strain of *Piscine orthoreovirus* (PRV-1) is involved in the development of different, but related, diseases in Atlantic and Pacific Salmon in British Columbia. *FACETS*, 3(1), 599–641. <https://doi.org/10.1139/facets-2018-0008>

⁸ Gagné, N., & LeBlanc, F. (2018). Overview of infectious salmon anaemia virus (ISAV) in Atlantic Canada and first report of an ISAV North American-HPR0 subtype. *Journal of Fish Diseases*, 41(3), 421–430. <https://doi.org/10.1111/jfd.12670>

⁹ Gustafson, L. L., Ellis, S. K., Beattie, M. J., Chang, B. D., Dickey, D. A., Robinson, T. L., ... Page, F. H. (2007). Hydrographics and the timing of infectious salmon anemia outbreaks among Atlantic salmon (*Salmo salar* L.) farms in the Quoddy region of Maine, USA and New Brunswick, Canada. *Preventive Veterinary Medicine*, 78(1), 35–56. <https://doi.org/10.1016/j.prevetmed.2006.09.006>

¹⁰ Jensen, Ø., Dempster, T., Thorstad, E., Uglem, I., & Fredheim, A. (2010). Escapes of fishes from Norwegian sea-cage aquaculture: causes, consequences and prevention. *Aquaculture Environment Interactions*, 1(1), 71–83. <https://doi.org/10.3354/aci00008>

¹¹ Morris, M. R. J., Fraser, D. J., Heggelin, A. J., Whoriskey, F. G., Carr, J. W., O'Neil, S. F., & Hutchings, J. A. (2008). Prevalence and recurrence of escaped farmed Atlantic salmon (*Salmo salar*) in eastern North American rivers. *Canadian Journal of Fisheries and Aquatic Sciences*, 65(12), 2807–2826. <https://doi.org/10.1139/F08-181>

¹² Wringe, B. F., Jeffery, N. W., Stanley, R. R. E., Hamilton, L. C., Anderson, E. C., Fleming, I. A., ... Bradbury, I. R. (2018). Extensive hybridization following a large escape of domesticated Atlantic salmon in the Northwest Atlantic. *Communications Biology*, 1(1). <https://doi.org/10.1038/s42003-018-0112-9>

¹³ VanderZwaag, D. and Engler-Palma, M. and Hutchings, J. (2011). Canada's Species at Risk Act and Atlantic Salmon: Cascade of Promises, Trickle of Protection, Sea of Challenge. 22(3) J.E.L.P. 267. Available at SSRN: <https://ssrn.com/abstract=2126177>

¹⁴ Milewski, I., Loucks, R., Fisher, B., Smith, R., McCain, J., & Lotze, H. (2018). Sea-cage aquaculture impacts market and berried lobster (*Homarus americanus*) catches. *Marine Ecology Progress Series*, 598, 85–97. <https://doi.org/10.3354/meps12623>

¹⁵ Skinner, M., Courtenay, S., & McKindsey, C. (2013). Reductions in distribution, photosynthesis, and productivity of eelgrass *Zostera marina* associated with oyster *Crassostrea virginica* aquaculture. *Marine Ecology Progress Series*, 486, 105–119. <https://doi.org/10.3354/meps10345>

open net-pen aquaculture be initiated for Atlantic Canada. The federal *Aquaculture Act* should set the foundation for such a transition going forward, regulating against the greatest risks that open-net pen sites now pose to marine habitat and coastal communities in the interim.

Please note, we intend to comment specifically on regulatory details pertaining to open-net pen sites still in operation in Atlantic Canada once the purpose and the jurisdictional scope of the Act become more clear, providing that its premise will posit a move towards land-based and closed containment technologies on both sides of the country.

3. Separation of Promotional and Regulatory Duties

We feel strongly that any *Aquaculture Act* must not enable the further development of aquaculture practices shown to cause harm to marine and freshwater ecosystems. For the proposed Act to successfully regulate against these harms, we urge a base in current *Fisheries Act* principles aimed at the conservation and protection of fish and fish habitat. Therefore, it is critical that regulatory responsibilities remain with DFO, where the authority and expertise to effect such protection resides. We urge this notion throughout the submission here as we are wary that there are a plethora of economic drivers that may be moving the government toward a federal aquaculture statute. Many of these drivers are drawn from the various economic commitments made by the government starting in 2017, including, but not limited to:

- facilitating responsible growth of the aquaculture industry;
- meeting commitments to remove bottlenecks to innovation and economic growth created by regulation;
- moderniz[ing] regulation to enable aquaculture to harness opportunities and grow; and
- removing the threat of future legal challenges to the regulation of aquaculture.

In our view, the initiatives above elevate our concern that there is a greater focus on enabling industry rather than regulating its environmental impacts. A number of independent reviews and audits recognize that DFO suffers from an inherent conflict in its mandate^{16 17 18}, requiring the protection of both wild and farmed fisheries while, at the same time, committed to the growth of aquaculture. In appropriately assessing and responding to the debilitating effects of aquaculture on aquatic ecosystems, the two objectives appear mutually exclusive. Especially in the case of net-pen operations, impacts to wild species and their habitats have not been and, we contend, *cannot be* effectively

¹⁶ Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River (Canada), & Cohen, B. I. (Eds.). (2012). *The uncertain future of Fraser River sockeye*. Vancouver, B.C.: Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River.

¹⁷ Hutchings, J.A., Baum, J.K., Fuller, S.D., Laughren, J., and D.L. VanderZwaag. 2019. Sustaining Canadian marine biodiversity: policy and statutory progress (2012-2019). A policy briefing committee report prepared for the Royal Society of Canada, Ottawa.

¹⁸ VanderZwaag, D. and Engler-Palma, M. and Hutchings, J. (2011). Canada's Species at Risk Act and Atlantic Salmon: Cascade of Promises, Trickle of Protection, Sea of Challenge. 22(3) J.E.L.P. 267. Available at SSRN: <https://ssrn.com/abstract=2126177>

regulated in an open water setting. The growth of this form of aquaculture is accordingly achieved at the expense of wild ecosystems.

The Royal Society of Canada (RSC), in particular, noted this conflict in their 2012 expert panel report, *Sustaining Canada's Marine Biodiversity: Responding to the Challenges Posed by Climate Change, Fisheries, and Aquaculture*, highlighting both DFO and industry inadequacies in meeting high standards of transparency and accountability in the aquaculture sector and calling explicitly for resolution¹⁹. In a more recent review analyzing implementation progress on 2012 recommendations, the RSC outlined specific implementation initiatives to address the lack of progress made on DFO's jurisdictional conflicts:

“The [Government of Canada] should develop processes and, if necessary, amend institutional structures to: (i) limit or eliminate real and perceived regulatory conflicts of interest; (ii) ensure that ministers are fully and transparently accountable for policy commitments to the use and conservation of marine biodiversity; and (iii) financially account for environmental costs associated with biodiversity loss, i.e., the costs connected with actual or potential deterioration of natural assets due to economic activities.”

The imperative to promote and expand aquaculture has resulted in a channeling of government resources, both human and financial, to enhance the profitability of the industry²⁰. This model has resulted in the suppression of, or the failure to fund, research into the impacts of aquaculture on wild fish, shellfish and their habitats. The ‘scientific standoff’ we see today, with independent research discredited or ignored, and with certain industry advocates attempting to brand the practice as sustainable despite evidence to the contrary²¹, reflects poorly on all aquaculture practitioners in Canada and puts both ecosystems and coastal communities in harm's way. In addressing these issues, the proposed *Aquaculture Act* affords an opportunity to pursue the implementation of RSC recommendations on three fronts by:

- i. restricting the inclusion of any promotional duties assigned to DFO within the Act
- ii. allowing DFO unequivocal regulatory authority pursuant to the protection of fish, fish habitat and other conservation-oriented principles governing the Act; and
- iii. allowing the federal minister to adopt measures to appropriately cost the impact of aquaculture operations on biodiversity in the marine environment. Such action also satisfies

¹⁹ Hutchings, J., Côté, I.M., Dodson, J., Fleming, I., Jennings, S., Mantua, N., Peterman, R.M., Riddell, B., Weaver, A. & Vanderzwaag, D. (2012). *Sustaining Canadian marine biodiversity: responding to the challenges posed by climate change, fisheries and aquaculture*. A policy briefing committee report prepared for the Royal Society of Canada, Ottawa.

²⁰ Rigby, B., Davis, R., Bavington, D., & Baird, C. (2017). Industrial aquaculture and the politics of resignation. *Marine Policy*, 80, 19–27. <https://doi.org/10.1016/j.marpol.2016.10.016>

²¹ Rigby, B., Davis, R., Bavington, D., & Baird, C. (2017). Industrial aquaculture and the politics of resignation. *Marine Policy*, 80, 19–27. <https://doi.org/10.1016/j.marpol.2016.10.016>

similar 2012 *Cohen Commission* recommendations suggesting that DFO remove any promotional duties from the Department's mandate²².

We accordingly recommend that the responsibility for the promotion of aquaculture be explicitly removed from DFO and transferred to other authorities competent to promote food products and trade. We take no position on the appropriate institutions to exercise this function, observing that both the federal and provincial governments possess constitutional authority adequate to the task. We look forward to future discussions surrounding the Act's inclusion, or exclusion, of the jurisdictional actors to which this responsibility may fall.

In subsequent action, we support the following conclusions of the *Report of the Independent Expert Panel on Aquaculture*²³ and recommend that the federal *Aquaculture Act* seek to establish legislative or regulatory parameters to ensure best scientific practices in the delineation and design aquaculture programming, including:

- **Recommendation 1:** DFO's adoption of "best practices for synthesizing of available scientific evidence on aquaculture risks" including the "incorporation of Indigenous and local knowledge as well as the use of systematic reviews, external peer review and other universally accepted standards";
- **Recommendation 4:** the establishment of an independent External Advisory Committee on Aquaculture, tasked with the regularly-scheduled review of Departmental plans and priorities; and
- **Recommendation 10:** the adoption and implementation of "an open science framework for aquaculture and develop strategic alliances in science communication and outreach".

4. Recommendations for Draft Act Sections

Below we make specific suggestions on the proposed Act itself.

4.1 Purpose and preamble

1. The Act should adopt the sustainability principles outlined in the Rio Declaration and should maintain adherence with global best practices supporting UNSDGs and other international agreements to which Canada is a signatory.

²² Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River (Canada), & Cohen, B. I. (Eds.). (2012). *The uncertain future of Fraser River sockeye*. Vancouver, B.C.: Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River.

²³ Canada, & Office of the Chief Science Advisor. (2018). *Report of the Independent Expert Panel on Aquaculture Science*. Retrieved from http://publications.gc.ca/collections/collection_2019/isde-ised/Iu37-11-2018-eng.pdf

2. The Act should be premised on the precautionary principle and should adopt the three fundamental purposes of the *Fisheries Act*, namely:
 - the proper management and control of the fisheries;
 - the conservation and protection of fish; and
 - the protection of fish and fish habitat.
3. Provisions in the Act should provide equal or greater protections for the conservation and protection of fish and fish habitat as those of the *Fisheries Act*.
4. The Act should be developed in the interest of strong regulatory guidelines across the aquaculture sector in Canada, setting national standards to which any other jurisdictional actors should be required to adhere.
5. The Act should be premised on the support of small-scale coastal livelihoods, and [international principles](#) in support of the management of the environment for the benefit of all future generations.
6. The Act should be consistent with the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP), including requiring the free, prior and informed consent of Indigenous communities in the development of any aquaculture project.
7. The Act should reflect the principles of transparency, openness, knowledge- and information-sharing, public consultation and participatory inclusion of Canadian coastal communities.

4.2 Scope

1. The Act must be scoped to accommodate any and all forms of aquaculture in Canada that may cause harm to aquatic ecosystems and should be regulated accordingly, including, but not limited to: finfish, shellfish and algae or marine plant operations.
2. The Act should be premised on the concept that salmon and other finfish sites will be transitioned from open net-pens to land-based or closed containment technologies by 2025 on the west coast and in future on the east coast. We recommend drafting that can facilitate strong transitional regulations for remaining net-pen sites and incoming land-based operations. We urge federal support for a just transition of workers currently employed by open net-pen operators and further provisions outside of the Act in support of small-scale and sustainable coastal livelihoods.
3. Given that wild seaweed harvesting is currently licensed under aquaculture leasing within the Provinces as a wild harvest operation, we recommend that seaweed be scoped out of the Act and be regulated instead under the fish habitat section of the *Fisheries Act*. This is of particular

importance given the lack of transparency of many seaweed harvesting operations and the burgeoning need to consider the contribution of seaweed to blue carbon in coastal environments.

4.3 Agreement, programs and projects

1. We recommend that a federal agency other than DFO have responsibility for the promotion of the aquaculture industry, but that DFO retain authority for any authorizations, compliance and enforcement with respect to the protection and conservation of fish and/or the protection of fish and fish habitat.
2. The Act must respect Indigenous rights and title, recognize the equivalent authority of Indigenous governing bodies, and provide a meaningful opportunity for Nations to participate in the design of regulations, management, monitoring and enforcement programs. Collaboration and consultation should respect confidentiality of Indigenous knowledge, as per commitments under the [modernized federal *Fisheries Act* updates](#).
3. The Act must be capable of accommodating the discrete jurisdiction of the provinces while also confirming DFO's clear regulatory authority over fisheries. *Morton v. British Columbia (Agriculture and Lands) (2009)* acknowledges that finfish aquaculture is a fishery and therefore is a matter of federal jurisdiction; we recommend the *Aquaculture Act* follow this decision and the Constitutional guidelines referenced therein.
4. Any jurisdictional authority falling to provincial bodies in Canadian waters under the Agreement section of the Act should adhere to federally-mandated national standards; these standards should set guidelines informing responsibilities outlined in all following sections of the Act (Zoning; Regulations; Leases, licences and fees; Environmental management; Reporting requirements; Offences; and Enforcement).
5. Land-based operations engaging in any release of effluent should mandate the regulatory involvement of ECCC based on administrative powers to prohibit the deposit of deleterious substances into waters frequented by fish.

4.4 Zoning

1. Consistent with obligations under the *Oceans Act*, and international agreements such as Agenda 21 and Rio+20, to develop inclusive and collaborative governance structures for the management of estuarine, coastal and marine ecosystems, the zoning provisions of the Act must define a process that provides potentially affected communities with a clear path to their meaningful and equitable participation in zoning decision-making.

2. Siting criteria must be made within the context of an ecosystem-based science framework that includes, but is not restricted to, estimates of carrying capacity and local and Indigenous ecological knowledge. Siting criteria should be drafted and designed to be precautionary.
3. Assessment of wild fish by COSEWIC as Special Concern, Threatened or Endangered must immediately trigger a review of operations of sites that are on or near the migratory routes and important habitats of those listed species. The review must consider restrictions on the operations of those sites and their removal.
4. Zoning processes should incorporate consideration of special marine, freshwater and coastal areas including, but not limited to: (i) protected marine areas; (ii) Ecologically or Biologically Significant Areas; (iii) critical habitat for federally- or provincially-listed species at-risk; and (iv) important commercial fishing grounds in proximity to potential aquaculture lease sites.
5. Siting decisions should consider other aquaculture operations in proximity to potential lease sites, as well as other marine-use types, in assessment of cumulative ecosystem impacts upon a given area.
6. Siting criteria should incorporate UNDRIP principles, including the need to obtain free, prior and informed consent for aquaculture operations on First Nation territories.
7. The Act must require environmental assessment of new tenures, expansions and alterations to existing tenures. These requirements should be in accordance with any federal and provincial environmental assessment Acts, where they exist, and said Acts should be updated/amended to include aquaculture operations as reviewable projects.

4.5 Regulations

1. Regulatory standards under the *Aquaculture Act* should meet or exceed those in other environmental protection statutes including, but not limited to, the *Fisheries Act*, the *Canadian Environmental Protection Act*, the *Species at Risk Act* and the *Pest Control Products Act*.
2. Approvals in accordance with current *Fisheries Act* regulations should still be required for siting within the *Aquaculture Act* when proponents are introducing or transferring fish, depositing substances, and conducting any other activities that could affect the protection and conservation of fish and fish habitat.
3. The Act must prohibit the introduction of substances deleterious to fish or fish habitat into the marine environment. This section of the Act should return authority for regulation and enforcement to ECCC. For each specified deleterious substance, threshold values must be

established so that, when exceeded, enforcement action and penalties result. Deleterious substance regulations should also include:

- a. limitations on nutrient additives and other biological oxygen demanding matter;
 - b. explicit prohibitions on the introduction of fish carrying disease or disease agents;
 - c. prohibitions on escapes in accordance with [North Atlantic Salmon Conservation Organization agreements](#), requiring 100 percent retention of all farmed fish at production locations; and
 - d. restrictions on drug and chemical use, lifted only after an evidence-based assessment of risk to marine ecosystems.
4. The Act should enable the regulation of area-based management measures, including but not limited to:
- a. establishing areas and sub-areas for the management of aquaculture;
 - b. establishing and determining the composition and powers of area-based management committees;
 - c. establishing cumulative impacts frameworks for the regulation of aquaculture operations within an area or sub-area;
 - d. regulating the timing, age-class and density of stocking of farms;
 - e. regulating mandatory fallowing of farms;
 - f. setting wild ecosystem monitoring protocols and mandating monitoring programmes;
 - g. establishing thresholds for, and regulating the timing of, treatments for disease and parasites;
 - h. prescribing conditions for the use of chemicals and drugs, including monitoring of impacts on non-target species;
 - i. prescribing conditions for ordering a cull or harvest of farmed stock;
 - j. establishing performance standards, offences and penalties; and
 - k. designating and empowering monitoring and enforcement personnel for the area.

4.6 Leases, licences and fees

1. Licence conditions should be transparent and publicly available.
2. Leasing options should include provisions for the broad inclusion of rights-holders, stakeholders, and community members in consultation and development of proposals; these provisions should include:
 - a. express involvement of First Nations;
 - b. multiple community consultations and substantial opportunity for public comment so as to accommodate the greatest number of would-be participants;

- c. the public release of information pursuant to potential environmental degradation in any public waterway, especially in proximity to special marine areas and important commercial fishing grounds; and
 - d. an obligation for the proponent to report on these inclusions and to provide plans aimed at the mitigation of harm to the aquatic environment.
3. Basic management frameworks for aquaculture activities should be set out in regulation, rather than publicly inaccessible conditions of licence.
4. Licence conditions must be drafted to be clearly enforceable. Further, DFO should retain the power to order aquaculture operators to remove fish from the water in response to a risk to wild salmon or the marine environment regardless of whether the farm is operating in compliance with the conditions of licence (e.g., sea lice management plans already in place).
5. In consideration of the potential for decommissions or lapsed leases, licence conditions should require proponents to provide basic decommissioning plans and hold companies liable for the cost of site clean-up in these cases.
6. License fees should be commensurate with the resource and area being leased.

4.7 Environmental management

1. Environmental management regulations should be designed within an ecosystem-based science framework that will:
 - a. protect non-target species, vulnerable species, habitats and trophic interactions;
 - b. protect essential habitat to sustain diversity and abundance; and
 - c. protect endangered and threatened species and accommodate their recovery.
2. Environmental management requirements should mandate the development of robust monitoring plans at all aquaculture sites, commensurate with the scale and scope of operation, outlining:
 - a. data collection techniques and frequency of collection;
 - b. biological indicators used to assess ecological health; and
 - c. action plans meant to address potential environmental impacts in the case of poor ecological health assessments.
3. Maintenance of the ecological function of aquatic ecosystems should be the first priority of the Minister when considering all aspects of the management of aquaculture. Including such language in the Act will provide necessary direction for decision-makers.

4. Decisions about what constitutes a disease or disease agent must be made through a transparent process consistent with the precautionary principle. Processes adopted under the Act should be consistent with the recommendations of the *Report of the Independent Expert Panel on Aquaculture Science*²⁴.
5. Environmental management policies should consider the impacts of climate change, including, but not limited to, forecasting models predicting water temperature, increased risk of algal blooms, and increased storm frequency and strength.
6. Containment management protocols should ensure all escapees can be traced to the farm of origin.

4.8 Reporting requirements

1. The Act should require transparent and timely public reporting, via public registry, for all facilities operating in the marine environment or facilities that may impact the environment broadly speaking.
2. Public reporting should occur at monthly intervals and should include environmental monitoring data including, but not limited to: water quality and benthic testing; the use of drugs and chemicals; reports on sea lice and other parasites; and disease testing.
3. Special public reports should also be required for any escapes occurring at open net-pen sites. Operators should be required to release information surrounding the number of escaped fish, the location of the escape, the reason(s) for escape, any infrastructural damage, and steps taken towards the mitigation of potential harm to the environment as immediately as reasonably possible.

4.9 Offences, punishment and ticketing

1. The administration of fines and penalties should be considered in the development of licensing conditions and written so as to be clearly enforceable.
2. Penalties and fines should be: a) commensurate with the harm caused by the breach of regulatory or licensing conditions; b) commensurate with the economic size and scale of the aquaculture operation; and c) significant enough so as to act as a deterrent for future non-compliance.

²⁴ Canada, & Office of the Chief Science Advisor. (2018). *Report of the Independent Expert Panel on Aquaculture Science*. Retrieved from http://publications.gc.ca/collections/collection_2019/isde-ised/Iu37-11-2018-eng.pdf

4.10 Enforcement

1. The Act must explicitly provide that leases and licences are conditional on compliance with the Act and any relevant regulations, and with the terms and conditions of the lease/licence.
2. A strong and positive compliance record must be a statutory precondition for being able to acquire additional leases and licences and also for licence renewal.
3. Basic and practical requirements for adequate enforcement should be considered in the development of this section, including, but not limited to, the allocation of resources towards aquaculture enforcement activity in various regional jurisdictions and enforcement officers' ability to access sites in a timely manner.
4. Enforcement pursuant to the release of deleterious substances into the aquatic environment should be returned to ECCC, in coordination with DFO.

5. Conclusion

In conclusion, we reiterate the importance of a regulatory mandate for DFO in relation to the *Aquaculture Act*, freeing the Department from the duty of promoting the industry. Such a mandate will enable DFO to carry out the protective responsibilities for fish and fish habitat and work towards healthy oceans and waterways for generations to come. Furthermore, we continue to stress the immediate imperative to follow through on the commitment to remove open net-pen salmon operations on B.C.'s coast, and to develop similar plans for Atlantic Canada. For a robust *Aquaculture Act*, we urge framing embedded in the principles of sustainability and framed within the goals of the UNSDGs and other international commitments to sustainable development and biodiversity conservation. An Act ensuring transparency, openness, ecosystem-based and evidence-based principles, and an Act that recognizes Indigenous rights and title and ensures the meaningful inclusion of Canadian communities, is an Act that could truly move Canada in a direction of leadership in global sustainable aquaculture practices.

We look forward to working with the federal government on a national *Aquaculture Act* and ensuring the recommendations above are part of this new law moving forward.