Sea Change Canada

AQUACULTURE IN CANADA

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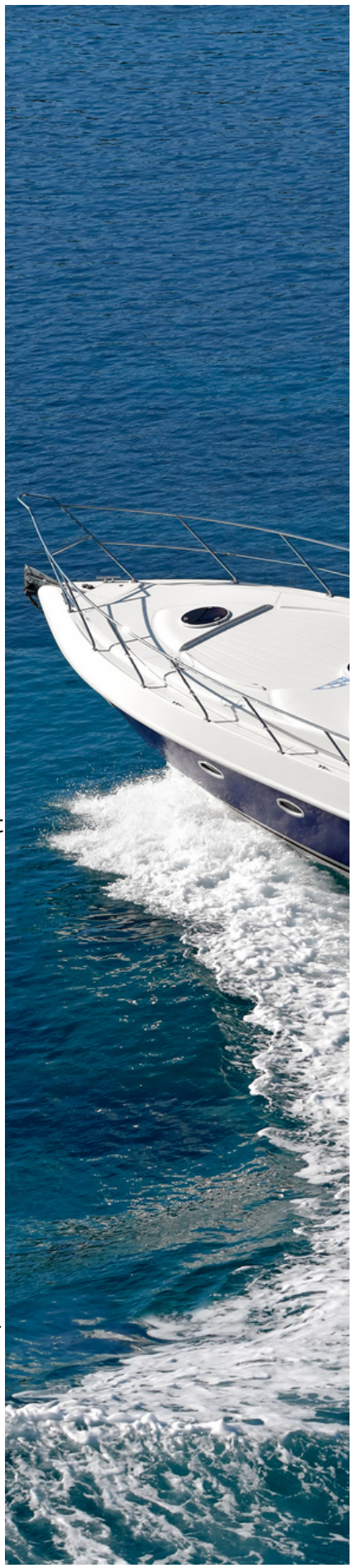
INTRODUCTION

There was a time when Aquaculture promised to deliver a solution to overexploited wild fisheries, but in fact, it has become a controversial and polarizing topic. The aquaculture industry in Canada is not only economically important, but it also contributes to the resilience of our seafood supply, and it's causing several significant environmental issues. From an economic perspective, aquaculture provides income and jobs for Canadians across the country. In British Columbia, the production of salmon leads Canada's finfish production, while Prince Edward Island produces the country's largest share of aquaculture-based shellfish. According to the Canadian Government, there were 260 aquaculture-based businesses in Canada in 2019, and the industry directly employed 3,700 people, (Lafrance, 2021). Net-pen aquaculture, which is visible on coastlines across Canada as large ring-like structures on the water surface, is the most common type of aquaculture and often what people think of when they hear the term. This type of aquaculture also most directly impacts the environment because of the free exchange of water with the environment, which can spread diseases or parasites to wild fish populations and cause nutrient loading issues, (Canadian Aquaculture Industry Alliance, 2020). However, aquaculture can look very different depending on the type of operation and what it is producing. Land-based, or closed system, aquaculture farms have become much more socially accepted in many parts of Canada due to their lack of direct impact on marine ecosystems. These farms, however, have a considerable energy footprint as they are forced to continuously filter and heat water to cultivate fish. Well-designed aquaculture can increase employment and food stability with a minimal environmental footprint, while poorly designed systems can wreak havoc on native fish populations and marine environments. This can truly be a polarizing topic, (Canadian Aquaculture Industry Alliance, 2020).

The polarity and amount of (sometimes contradictory) information surrounding aquaculture in Canada creates a considerable amount of confusion and conflict. To add to the complexity, the regulation of aquaculture across Canada is shared on different levels between federal and provincial governments, and some provinces have chosen to allocate some of their regulatory authority back to the federal government. This means that even between provincial governments there are discrepancies in the scope of the legislation, which makes managing the national landscape even more difficult, (Lafrance, 2021).

The idea of a Canadian Aquaculture Act has been in discussion for several years and is being drafted at this time. Read on the discover more on the ecological issues that surround aquaculture in Canada and where Sea Change Canada's Coastal Champions are working to make a difference in this area.

ECOLOGICAL ISSUES



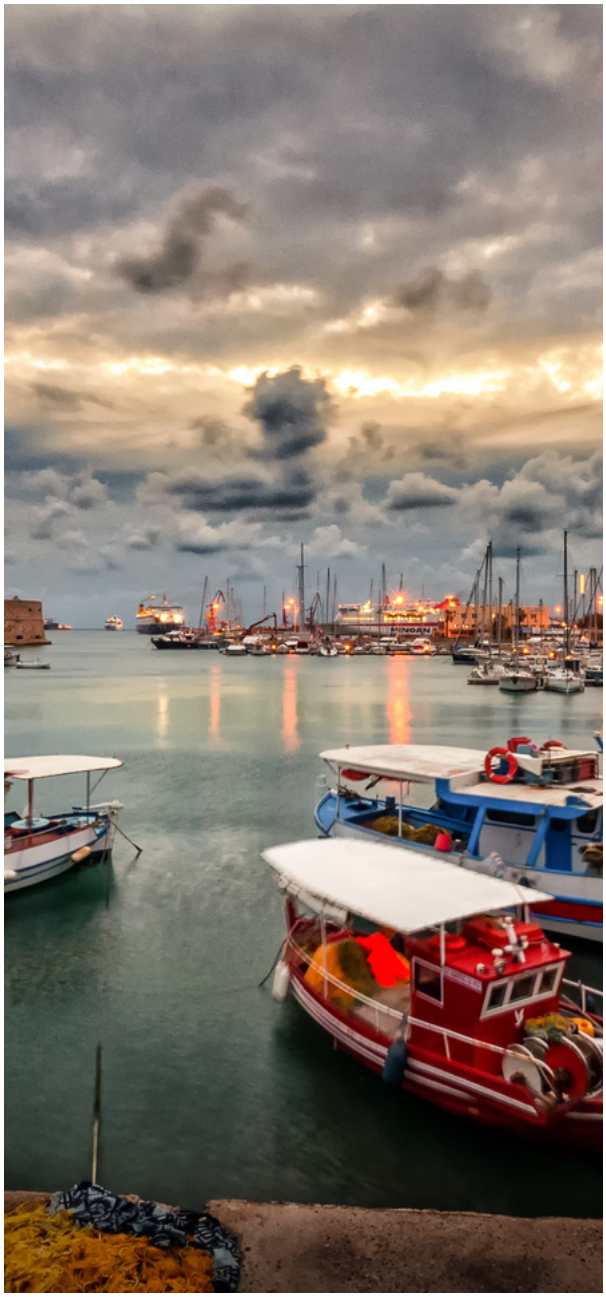
As mentioned, open-net farms have the most direct impact on the marine environment. Key concerns surrounding these types of fish farming operations include the release of non-native species, the spread of diseases and parasites, and the impact on the hosting ecosystem and benthic environment. When feed and waste products from aquaculture farms enter the ecosystem, eutrophication can occur from the presence of excess nutrients in the water. Essentially, raising fish in ocean pens artificially raises the fish population above what the local ecosystem can handle – uneaten food and waste are more than what the system can handle. Eutrophication can lead to harmful algae blooms, which in turn can result in the production of toxins, low levels of oxygen in the water, and the death of living organisms. Foreign inputs such as antibiotics and feed additives may also impact pathogens and antibiotic resistance and cause toxicity for native organisms. In addition, the high concentration of a single species in a confined space can cause diseases and parasites to spread rapidly and potentially be transferred to wild fish. For these reasons, many organizations in Canada, and internationally, are pushing for a ban on net-pen aquaculture, (Martinez-Porchas & Martinez-Cordova, 2012).

Possible alternative management plans can help to alleviate or reduce the impact of open net aquaculture in Canada, including Integrated multi-trophic level aquaculture (IMTA). IMTA is a system that cultivates species at different feeding levels into a single system to minimize eutrophication in the local ecosystem – the system itself helps to deal with some of the extra nutrients that cause problems for the local environment. Raising native species can also reduce risks to the environment, however, it is very common to have non-native species being farmed due to their economic value. The use of physical barriers and vaccinations can minimize disease and parasite risks. These opportunities and more can be used to minimize the environmental impacts of net-pen farming, however, incentives for commercial operators to implement these practices are low, (Martinez-Porchas & Martinez-Cordova, 2012).

The original claim that aquaculture was a pathway to restoring wild fish stocks, and therefore solving the issue of overfishing, remains highly debated. Some sources support the position that aquaculture can assist wild fish stocks by diverting the demand, while other sources refute this claim. Although there are no studies showing that farmed fish directly replaces the demand for wild-caught fish, it is a fact that to produce farmed fish, wild-caught fish are often used as a feed ingredient – clearly not a very sustainable situation. To produce a typical kilogram of farmed fish, 0.7kg of wild and 0.5kg of fish oil is required – more goes into the system than comes out of it. Aquaculture itself, as it is often practiced, places a demand on wild fish stocks, though some producers are making efforts to introduce other sources of protein for fish feed. Ultimately, management and policy will be incredibly important in balancing the interest of wild-caught and farmed fish to produce the most beneficial balance, (Canadian Aquaculture Industry Alliance, 2020).

HUMAN IMPACTS

Aquaculture creates employment in remote and coastal communities that benefit greatly from good jobs. For instance, Campbell River in British Columbia lost many jobs when their local pulp mill closed but has become an area with numerous aquaculture developments that have replaced many of those lost jobs. Aquaculture has also been integrated into and adopted by many Indigenous communities. The Canadian Aquaculture Alliance reports that forty different Indigenous communities are directly or indirectly involved in the 260 Canadian aquaculture operations, and the Canadian government has further supported Indigenous engagement with aquaculture through the Aboriginal Aquaculture in Canada program. However, many more Indigenous communities rely on wild fish stocks and have been rallying to end net-pen farms, particularly in the Discovery Islands in British Columbia, (Lafrance, 2021).



Having national aquaculture production also improves the resiliency of the Canadian seafood supply, which can lead to healthier diets and reduce the consumption of other environmentally damaging protein sources. Fish and seafood have healthy fats that can contribute to part of a healthy diet and roughly half of the purchased fish products in Canada come from aquaculture. In addition, in light of supply chain complications caused by the COVID-19 pandemic, many countries are looking for ways to increase the resilience of their food systems. Aquaculture can play a role in supplying the national food system with high-value protein, but this could be realized more sustainably with low-impact systems such as closed systems or land-based systems that would minimize the impact of fish farming on the environment, (Lafrance, 2021).

Our Coastal Champions

Living Oceans is a conservation advocacy society based on the West Coast of Canada that supports sustainable seafood and the implementation of closed system aquaculture farming.

Healthy Bays Network is a community alliance whose mission is to transition away from net-pen finfish aquaculture located on the East Coast of Canada.

Georgian Bay Association is advocating for sustainable aquaculture in the Great Lakes, they support the transition to contained systems or land-based farming.

CONCLUSION

Aquaculture has a fraught past and stakeholders are approaching the industry with caution. Despite the fact that the aquaculture industry in Canada provides social and economic benefits, it needs to continue to make progressive improvements in environmental performance. To date, governance of aquaculture in Canada has been fragmented and complex. With the incoming Aquaculture Act, Canadians can hope to see increased cohesiveness in the governance of aquaculture, along with improved environmental performance and compliance. In the meantime, consumers can take action by selecting seafood carefully, look for products that are sustainable and environmentally responsible, know where seafood comes from, and what practices are involved in raising or catching it.

TAKE ACTION!

Purchase Sustainable
Seafood Learn about sustainable seafood practices and focus on purchasing from those that implement progressive environmental management.

Choose Native Species
The cultivation of native species eliminates the risk of non-native species' escape. If purchasing farmed fish choose to purchase species that are native to the environment in which they were farmed.

Education
Educated yourself on risk to your local ecosystems and initiatives Aquaculture is highly diverse across Canada and Internationally, familiarize yourself with risks and issues that impact your region and become involved in initiatives that reflect your values.

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