

**RESPONSE TO the DOELLE-LAHEY  
DRAFT FRAMEWORK**

**INDEPENDENT AQUACULTURE  
REGULATORY REVIEW  
for NOVA SCOTIA**

**AUG 31 2014**

**From**

**COASTAL COMMUNITY ADVOCATES**

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**“The Panel's draft report is a long stride in the right direction -- and obviously owes a great deal to the voluntary work of deeply concerned, knowledgeable and capable citizens, not just in the affected communities, but across Nova Scotia. There's a remarkable consensus in the general public that finfish aquaculture can be part of our future -- but in land-based biosecure facilities, not in the sea.**

**I commend the panel, and hope the provincial government shapes its policies in accordance with the panel's findings.”**

**Silver Donald Cameron, CM, ONS, PhD**

**Host and Executive Producer, “TheGreenInterview.com”**

# **COASTAL COMMUNITY ADVOCATES**

**Promoting community voices**

**Protecting wild fisheries**

**Preserving pristine**

## **OVERVIEW**

The mantra, or motto above defines the mission and objectives of our organization. Nova Scotia's coastal communities are typically small, frequently isolated, and sometimes disconnected from centers of trade, commerce and government. The common link among our member communities is the presence of fish feedlots in our harbours, or proposals under consideration to establish fish-rearing in open-pen technology in our harbours.

We are grateful for the open and non-judgmental posture taken by Meinhard Doelle and Bill Lahey, and for the creation of advisory groups on process and content. The passion and commitment of these volunteer advisors underline the concerns of everyone in Nova Scotia who wants to protect our coastline.

As advocates for the health of coastal communities, our real-world experiences with open pen fish feedlots have led us to conclude that this irresponsible and polluting technology is not acceptable anywhere in Nova Scotia. Our harbours are typically small and very shallow, compared with coastal water depths where salmon and trout are raised in Chile, Norway, Scotland and Ireland. Competing interests such as our inshore lobster fishery, shellfish culture, seaplant harvest and tourism are incompatible with an industrial feedlot model that has no waste management system. By any standard, open pen aquaculture in Nova Scotia has been a failed experiment. Organic and chemical wastes from large-scale feedlots are at least, objectionable, and at worst, deadly. There is no reason to raise fish in ocean pens except to exploit the waters as a free waste dump. That is why we say, "There is no right way to do the wrong thing."

Notwithstanding our rejection of the open-pen business model, Coastal Community Advocates have actively participated **WITHOUT PREJUDICE** in the Aquaculture Review process. Our mission has been to expose the day-to-day realities of industrial feedlots that are out-of-sight, out-of-mind for regulators. Our observation is that the existing regulations are weak and inadequate, and that the Nova Scotia Department of Fisheries and Aquaculture (NSDF&A) lacks the experience, capacity and the will to enforce limits. We recognize the need for limits in various areas including site boundaries, excessive contamination and altering of the seabed, containment of escaping fish, protection of wildlife (marine mammals, wild fish and birds), stocking rates, monitoring of harvest practices, and especially, communication with host communities regarding feedlot routines.

The Panel has confirmed the need for clear limits and oversight. However, even if it were possible to resolve, improve and enforce best practices, we are not optimistic that scale-appropriate feedlots in Nova Scotia would be large enough to be commercially feasible.

"Social license" is a term used by governments to describe local acceptance of industries that are potentially threatening or competitive to the fabric of communities. The fish feedlot operators have invested heavily in radio, TV, newspaper and billboard advertising to promote their model as benign. NSDF&A commissioned a study in c. 2010 by LURA Consulting, called "Roadmap to Aquaculture Development", that focused heavily on ways to influence communities. Instead of increasing acceptance of the open pen model, these efforts have served to educate the public and raise awareness of two things: the true nature of sea cage fish production, and the degree of support enjoyed by the fish feedlot industry from the government of Nova Scotia.

The Doelle-Lahey Draft Framework emphasizes social license as prerequisite to aquaculture (finfish) development/expansion. It recognizes that there are legal, environmental, economic and cultural components to social license. We wish to emphasize that genuine social license needs to grow naturally, out of a state of community health and that social acceptance cannot be bought, sold or stolen.

Historically, the way has been paved for acceptance of industrial feedlots by industry and government making impossible promises of job creation. There is a completely false presupposition underlying this approach. The Panel needs to ask for some serious analysis of the job creation history before assuming that industrial feedlots will bring a net benefit to communities. We recommend that a study be undertaken by NS Economic Development to determine employment figures, income analysis, job security questions, job quality and sustainability. There are real-world examples of misleading employment opportunities in Newfoundland and New Brunswick, as well as a history of broken promises in Shelburne NS.

NSDF&A, under guidance from the feedlot operators, deny any environmental impacts from feedlot operations beyond the lease boundaries. NS Environment and Natural Resources Departments need to be engaged and bring much-needed independent expertise to studying far-field effects. In the past 8 years or longer, no investigation of aquaculture impacts has been undertaken by the province. Private interests and community groups have done brilliant work that has been ignored. Perhaps the problem is a lack of capacity within the F&A Department to understand and interpret the findings... or perhaps what's missing is the political will to give credence to communities.

The province has a legal obligation to demonstrate economic benefit to communities. This is provided in the Fisheries and Coastal Resources Act. Both past and future cost/benefit analyses need to be carried out by independent third party economists.

Further to the dollar costs, environmental/social costs need to be factored into the analysis. An agency such as GPI Atlantic could be helpful. Until this kind of projection has been completed by a trustworthy and independent agency, communities are being asked to accept a story spun by a greedy industry pursuing its own interests. Companies that are extracting profit at high environmental and social cost while paying no municipal taxes do not enhance social license. The Panel has bought into the job

creation myth without asking for solid information on this topic, or the environmental costs. Minister Colwell also emphasizes job creation, yet his department lacks the capacity to evaluate job creation history and projections in finfish aquaculture. Instead, there is apparently a blind acceptance of industry promises.

Culturally, small coastal communities are close-knit and residents are mutually dependent. Companies attempting to achieve social license have used threats to Harbour Authorities and fishermen, divide and conquer campaigns, even sending RCMP to warn residents to not interfere with fish feedlot installation or stocking. Obviously these tactics produce resentment and alienation.

It seems so simple. Communities with long history and tradition, in resource-based economic climates, do actually know what is good for them. Social license ought to be rooted in the community's view of its own future. Social license is a gesture of welcome to a mutually beneficial arrangement. That condition is not being met in communities where industrial feedlots have been imposed. In these settings, decision making power needs to be restored to communities that have been exploited. An ongoing involvement of community interests needs to form part of any agreement on shared resources. Privatization of the marine environment to out-of-province interests is an unacceptable concept for two reasons-- the boundaries cannot be maintained, and the public resource area leased to private interests is removed from public use and influence without compensation.

Most small coastal communities in Nova Scotia are underpinned by the lobster fishery. Briefly, any threat to lobster is an unacceptable risk to the health of a fishing community. The risks posed by finfish feedlots are:

- destruction of lobster habitat
- displacement of fishery with resulting increased costs
- market prejudice
- chemical contamination and pesticide kills threatening lobster stocks

Lobster is an organic product that relies on pristine habitat. Lobsters downwind or downcurrent from a feedlot are as vulnerable as an organic crop on farmland when wind drift carries pesticides from a neighbour's spray program.

Historically, the feedlot operators have found it economically feasible to break laws and pay fines as a cost of doing business. Any resident of a coastal community knows that farmers and fishermen are held to a much higher standard. Social license has not been enhanced by this discrepancy.

In summary, the impact of a multi-national industry on a small coastal community is inevitably going to be a David and Goliath story if/when conflict develops. Residents of Nova Scotia have the right to expect that government departments (our paid employees) will put our interests first, and ensure that business interests, particularly from outside NS, will respect local residents, their environment and their rights. While the Department of Fisheries and Aquaculture is aligned with and promoting an industry that is not

wanted in coastal communities, we have a conflict of interest within the Department and a very big problem of credibility between government and the electorate.

**Coastal Community Advocates submit four recommendations:**

- 1. Consider the proactive opportunity for world leadership, creating policy in Nova Scotia that prioritizes respect for citizens and public resources. This approach applies not only to finfish aquaculture but to fishing, forestry, mining, land use planning, shale gas, offshore petroleum, wind power and watershed issues.**
- 2. Obtain accurate financial and job creation figures using Genuine Progress Index and/or true cost accounting to prove measurable, verifiable net benefits in job creation and GDP.**
- 3. Resolve conflicts of interest within government. Make oversight, regulation and enforcement discrete from promotion and enabling for industry.**
- 4. Ensure ongoing social licence and democratic process throughout every economic development proposal.**

**These four points are re-visited in “OPPORTUNITY KNOCKS”, the final article in this document.**

Further input on specific topics follows below, including commentary on climate change, wild salmon impacts, feedlot management problems, community consultation issues, pre-selection criteria for feedlot sites, failure of the open-pen model, etc. We emphasize that the contributors to this document are from all parts of the province and all walks of life. What we share is a commitment to the health and prosperity of coastal communities in Nova Scotia.

Gloria Gilbert, Osborne Harbour

## POLICY FAILURE

The creation of the Doelle-Lahey Panel of Independent Aquaculture Regulatory Review was a recognition by the provincial government that serious policy failure has occurred in the aquaculture industry in Nova Scotia. Current licensing process had proven inadequate and has generated a great deal

of uncertainty and mistrust within coastal communities as evidenced by the large numbers of protests along the Nova Scotia coast. The allocation of public resources for private gain requires social licence for it to succeed, and this has clearly been not the case, as evidenced by the ongoing debates in places such as Port Mouton, St Mary's Bay and Jordan Bay, as well as along the Eastern Shore..

The analysis presented by the Doelle-Lahey panel in their draft policy document does an excellent job in identifying the problems with the current regulatory structures and its recommendations go a very long way in overcoming past policy failures. Notwithstanding the impressive achievement that this document represents, many members of coastal communities remain firmly opposed to large open-pen fish farms and see them as an inappropriate and unsustainable form of rural economic development that comes at too high an environmental cost and with too few economic benefits. These economic benefits accrue elsewhere, and the environmental costs are borne by the communities and the local ecology, resulting in the loss of social licence.

Almost all fishery policy on the east coast of Canada has emerged from inquiries or task forces into what has seemed to be ongoing crises in the industry. In the context of these conflictive scenarios, in most cases, it was the loudest voices that were heard. The collapse of the cod in 1992 is a clear indication of the ultimate failure of this crisis-oriented approach to the creation of policy. If the Doelle-Lahey Panel is not to become one more instance in a long line of these policy failures, it may have to hear more than the loud and the powerful voices on this issue.

The loud and the powerful have a long history in controlling resource allocation in Canada. For the past forty years, the public has tried to break open this closed policy monopoly (Howlett, Hessing, and Sommerville. 2007). There have been very few success stories where the public has been successful in opening up these stable policy networks that have been controlled by regulators and business interests. An example of this failure by the public to influence policy outcomes is illustrated by Richardson, Sherman, and Gismondi (1994) in their analysis of an environmental impact assessment hearing for a pulp mill in Alberta. They concluded that the process leading to the approval and licensing of the mill was compromised by the fact that by the time the hearing took place both the government and the proponent had so much invested in the process that it would have been difficult to turn down the project, and that the polarizing presence of the "jobs vs. environment" debate was very conflictive for the community and any voices supporting health and environment were drowned out by economic arguments. In this context, public participation fails to influence policy decisions that end up favouring large interests.

It is this kind of conflictive situation that has been evident with regard to aquaculture site approvals in Nova Scotia over the past few years. The Panel recognized this failure and has recommended the creation of the green, yellow, and red zones as a process that can begin to overcome these failures. While approving the concept of grading possible sites in the selection process, we wish to note that, the "dynamic" process that Doelle-Lahey Panel identifies, where application of licences will be occurring at the same time as ecological analysis that would classify areas as red, yellow, or green. If these processes take place simultaneously, they give every indication of being fraught with the same problems of policy monopoly by business and regulators, and "jobs vs. environment" tensions in communities, and are therefore doomed to repeat the failures of the past, where citizens end up feeling shut out of the process.

If these regulatory problems are to be overcome, and social licence is to be restored, the creation of the green, yellow, and red zones need to occur in the absence of an application for a license. As well, this

kind of analysis should not only include ecological factors such as water depth and current direction, but it should also identify the size of the “farm” that is judged acceptable for the site. Once this community consultation process has been completed and these important decisions have been made, proponents would then have a clear indication of both the size and location of possible fish farm sites that coastal communities regard as appropriate and sustainable. These interests would then be welcome to apply for a licence, a process that would be simple, conflict-free, and without the uncertainty that has marked the approval process in the past.

This extension of the classification process in site selection would go a long way to restoring social licence among coastal community members who have felt in the past that site approval was a foregone conclusion by the time public consultation took place.

In a larger sense, a link can be drawn between the conflicts that fish farms have manifested in Nova Scotia with similar kinds of antagonism that have occurred with regard to wind farm approvals in places such as Ontario. In both cases hitherto publically-owned resources have been privatized for the purposes of profit by business interests. In their desire to promote economic growth, government officials have, in general, been supportive of this expansion of the economic realm, and in doing so, are perceived to be doing the bidding of economic interests, at the expense of social and environmental well-being. Governments tend to respond to these tensions between economic and social/environmental goals, by framing the problem as one of policy delivery, when in fact, it is a crisis in the way that capitalism itself is organized. Elected officials cannot challenge these economic forces and remain in power, so they displace resource issues into the political realm and make it a rationality problem in policy delivery (Hay 1994). These pressures are evident in both the creation of the Doelle-Lahey Panel, with its goal of diffusing social tensions, as well as in the report itself, where the actual behavior of business interests over the past two years is not discussed (e.g. criminal convictions), and the focus is on the subjective issues of community members’ “mistrust” and “lack of confidence.” For these kinds of reasons, Howlett and Hession (1997) concluded that resource policy in Canada remains “reactive and incremental” and excludes wider democratic concerns in the process.

Ray Rogers, Little Harbour/Arnolds

## FEEDLOT MANAGEMENT PRACTICES

Feedlot practices have been closely observed and filmed throughout a full production cycle at Site 1040 in the Annapolis Basin. Medication of feedlot fish is outlined in the data below:



## Antibiotics

The Environmental Goals and Sustainable Prosperity Act states: “the health of the economy, the health of the environment and the health of the people of the Province are interconnected.”

More importantly we feel the health of the economy and the health of the population **depends** on a healthy environment.

Our position is that a moratorium is not sufficient. Fish and all animals raised in a feedlot, requiring antibiotics to keep them alive, puts public health at risk. We feel that the Panel may not be treating this issue with the seriousness that it deserves.

The Panel was told “...the use of antibiotics is limited and declining.” and seems to have concluded that antibiotic use can be controlled with regulations. From our experience through FOIPOP requests DFA had no records of three of the four applications of medicated feed that took place at site 1040. There is no feasible way to regulate what is or is not going into the ocean through an open net pen without 24-hour surveillance.

The amount of medications used can be significant. We observed that over 9 percent of the feed used at site 1040 was medicated, and totaling the antibiotics in the waste feed with the amount that passes right through the fish, as much as 70 to 80 percent ends up in the environment. [1]

For example, in Aug/Sept 2012 19,040 kg of antibiotic laced feed was applied in just 10 days, at just one site. Antibiotic resistant bacteria are a growing human health concern. The use of antibiotics on feedlots has to be stopped.

One subject that does not seem to have been researched is the effect of antibiotics on seagulls and other sea birds. Seagulls are regular diners at the feedlot. They eat the medicated feed and other birds eat the wild fish that have eaten the medicated feed. All of this contributes to the development of antibiotic resistant bacteria.

We disagree with the industry that the kind and quantity of antibiotics used be regarded as proprietary information. We think it is more important that people fishing near the site are informed and that consumers eating the fish know they were treated with antibiotics. As far as the lobster industry and other fisheries are concerned, using antibiotics and possibly pesticides on an open net pen is equivalent to raising organic food next to a farmer using pesticides and herbicides. That is unacceptable.

We know that the fish that arrived at site 1040 were sick in the hatchery and were given an antibiotic treatment that ended less than two weeks before the fish were transported from New Brunswick to the ocean in Nova Scotia. After a few weeks in the ocean, when the mortalities remained high, another antibiotic treatment was given. To us it seems clear that the smolts that arrived at the ocean site were diseased. We have since observed site 1039 in the Annapolis Basin being slaughtered in February 2014 then being restocked in May 2014 and by July 2014 they were being medicated. This is the same time frame that took place at site 1040 in 2012, supporting our suspicions that sick fish are being transported from hatcheries in New Brunswick into Nova Scotia waters and medicated to keep them alive.

Wouldn't any area (green, yellow or red) be unsuitable if the industry is raising sick fish in the hatcheries and when sick fish are being transported from one province to another, ensuring the spread of disease?

Wouldn't any area (green, yellow or red) be unsuitable if the industry is using pesticides, antibiotics and antifoulants next to a pristine, organic, lobster fishery?

### **Sea Lice:**

Studies have indicated a direct link between pathogens from aquaculture sites and substantial declines in wild salmon fisheries. [2]

On page eight (1.3.3) you seem to conclude that any number of sea lice on a feedlot, as long as the number is below the level at which treatment is required, would not create a risk to wild salmon. However, even with only a few sea lice per fish on hundreds of thousands of salmon in a feedlot, migrating wild salmon are put at further risk. If this was not your intent it should be clarified.

### **WTF**

In (12 Provisions on Aquatic Animal Health ...) you describe the goal as being "to design and operate fish growing operations that grow healthy fish, fish that never or very rarely require medication or pest control treatment, and that have the lowest mortalities in the industry." This statement would suggest that we are still experimenting, after 40 years and the demise of the cod and halibut fisheries, wild salmon on the edge of extinction and we still haven't got it right? Why are we experimenting in the ocean? At what stage of doing things over and over again and expecting better results are we going to admit that raising fish in a feedlot is ludicrous?

1. *Hernandez Serrano, P. "Responsible use of antibiotics in aquaculture"*  
*FAO Fisheries Technical Paper. No. 469 Rome, FAO. 2005. 97p.*  
<http://www.fao.org/fishery/nems/34183/Fr>.

2. "Effects of parasites from salmon farms on productivity of wild salmon"  
[www.pnas.org/content/108/35/14700.full](http://www.pnas.org/content/108/35/14700.full)

Ron Neufeld and Kathaleen Milan, Port Wade

## COMMUNITY CONSULTATIONS

The Panel's report appears to reflect the importance of the communities as stakeholders: The communities are to be involved in the decision making process regarding licensing, their concerns are to be taken seriously and at face value, they are to be included in an ongoing Advisory Committee for Regulations, there will be a hearing for all fish farm applications, and the public will be kept informed as to the status/compliance of open net fish farms. These are all welcomed recommendations.

### **Specifics/questions regarding licensing process:**

Mandatory hearings and written justifications of the licensing decisions should help to improve the licensing process and its transparency. And yet, it needs to be made clear as to **who** it is that will be providing the 'numbers' regarding the socio-economic benefits that will accrue to the communities. Who will be determining the "contribution of the proposed operation"? To date the industry has 'spun' the numbers, as the actual number of jobs have been exaggerated by the industry: the promised/industry estimated number of jobs to local residents in the communities where the farms are located have not been in evidence. Does the Panel have a suggestion as to how more realistic numbers could be the input into this decision process? For, if one is overstating the numbers/ "benefits" are being overstated, then the decision is being based upon false information.

Besides jobs, specifically what are the other socio-economic benefits that the Panel anticipates would accrue to the communities/residents where open net pen finfish farms are located?

The current low-cost high volume production model currently used in Nova Scotia for open net finfish aquaculture, is contrary to the Panel's emphasis on/recommendation for low impact/high value aquaculture, as being the appropriate model for Nova Scotia to pursue. It seems to us that to "produce the highest value products for the lowest possible environmental impact, while maximizing social value" would logically point to/encourage land-based, closed containment fish aquaculture. The Panel seems to be encouraging small operators, and niche-type production and yet the Panel did not come out boldly in favour of pursuing/transitioning into closed containment/land based. Why is that?

Land based closed containment is viable, becoming more and more competitive (and remember that many of the 'costs' of open net pen are not being taken into account) definitely would accommodate smaller operators and niche markets. This could have been recommended as a longer range strategy for Nova Scotia.

### **Application information/Environmental Impacts:**

"Information that is relevant to understanding the operation and effectiveness of the regulatory process as it applies to each proposed and approved site should be information that is readily available to the public." Historically, the information for proposed sites has been information provided by the proponent. Is there a NEW type of licensing application? The application that has been in effect, has required an Environmental Impact Statement/Assessment from the proponent. However, this does NOT provide information on how the proponent's operation will impact the environment. Rather, it details how the environment will impact the proposed open-net fish farm. These are very different pieces of information. For example, the Environmental Impact Statement (EIS) provided by Kelly Cove Salmon Ltd. (Cooke Aquaculture) for the St. Mary's Bay sites is a case in point. In their EIS/application the proponent did NOT divulge how many metric tonnes of feed waste and fish feces would be directly released into the marine environment during their production cycles. And yet, these thousands of tonnes of waste

would significantly impact the health of the marine environment, and is a 'cost' borne by it. Panel are you aware of this, and/or has a new licensing application been instituted since the St. Mary's Bay licensing? Is the proponent now required to detail how its operation will impact the environment?

### **Proposed coding of Nova Scotia shores:**

In December 2008 Stantec Consulting produced a Roadmap for aquaculture Investment in Nova Scotia. It is color coded, and on the 'salmon' map, it states: "The government of Nova Scotia has stated its intention to greatly increase salmon aquaculture in Southwestern Nova Scotia".

We are assuming that the government provided this map and report to the Panel. How would the Panel anticipate that their proposed colour-coded map for suitability of finfish farming might differ from the Stantec maps? Who will and how will the colour-coding of Nova Scotia shores be accomplished?

### **Attitudes:**

The Panel notes the necessity for an attitude change by government. They state: "the attitude which informs regulation must take the concerns of those who live in coastal communities seriously and at face value." We fully agree with this, and would like to relay a further piece of information regarding the extent to which government's attitude is in need of change. In the FOIPOP documents that we have received relating to the approval of the license/leases in St. Mary's Bay, we found that a decision was made to 'manage' the public, rather than take seriously the hundreds of emails and letters they received from the public during the licensing process. It was decided that simply a standard letter would be composed and mailed out. A further telling note: correspondence in this FOIPOP shows that government administrators responsible for the lease/licensing approval process, refer to Cooke Aquaculture as their 'client' (i.e. they were not referred to as just a proponent). 'The attitude' that the government is working with and for the industry appears to be deeply embedded. When this prevails, how can public resources be protected/will they be protected? How would the Panel propose that this "attitude change" be accomplished?

### **Licensing and Regulatory Process:**

The Panel recommends that there be legislation governing the licensing process. They set out the principles to guide that process, and therefore DFA will be under legal duty to address these principles in its assessment and decisions on applications for licenses. I fully support the Panel's recommendation that DFA be required by law to consider these, but who will be providing the input/information for consideration, to make the assessment? Currently application information is provided by the proponent. Will the community /traditional fishermen of the community be providing information to be considered with due weight as well?

It is of utmost importance that 'discretion' by departments, Ministers, the operator, etc. be taken out of the regulatory process. In your report you often use the word "should". This is reasonable since you were to provide recommendations. However when it comes to writing and implementing regulations and standards, it needs to be emphasized that the wording contained therein be "shall" rather than "should". Only this can alleviate discretion and provide protection. "Shall" is enforceable, "Should" is not. One needs only to look at the Canadian Organic Aquaculture Standards that were adopted, to see the discretionary nature of these (for instance, in the allowable feed for salmon), and consequently the lack of protection/any regulation they provide.

### **Site closure and cleanup:**

Your recommendations relating to this will be helpful in alleviating the messes that are currently left in the coastal waters when operations cease. Thank you for these recommendations.

### **Implementing recommendations:**

I note that the Panel has emphasized that their recommendations are connected, that is, they do not want the government to 'cherry pick' from the Panel's regulatory review. I am in total agreement with this. If the government decides to 'selectively' implement recommendations, the whole thing will fall apart as they are so inter-dependent.

Question: Did the Panel have access to the LURA Report of September 2010? The LURA Consulting report did clearly identify to government that the approach LURA was recommending needed to be twofold:

1. The Department needs to make sure the environment is being protected and that the industry being promoted is truly sustainable.
2. Promote aquaculture via mailed brochures, newspaper, radio, internet, etc. (and make sure that the political machine at all levels is staunch supporters.) Further, it was suggested that Dept. Fisheries and Aquaculture work with AANS and individual operators to put a face on the industry.

The Department/Government wholly embraced #2 of the LURA recommendations, but virtually ignored #1. – The Department has to date provided: nothing more than an *illusion* of addressing the principles of environmental protection; no transparent monitoring; and no respectful consultations, until the Doelle-Lahey Panel. It is because of government's past "cherry picking" that I encourage you to strongly re-emphasize the interdependence of your recommendations, and need for implementation in full.

### **In Closing:**

I commend the Panel on a thorough consultation process, and this thoughtful report (although I do think the conclusion that was drawn fell short regarding closed containment, as I have noted previously). I am however hopeful that the Doelle-Lahey Panel's report will be accepted and **implemented in full**, as it will be a step in the right direction, by significantly improving the current environmental impacts and social conflicts due to open net farming.

Thank you for the opportunity to comment. I am hopeful that you will give my comments and questions your full consideration.

Sandra Hanson, Freeport

## CAPITALISM in contrast with the PRINCIPLES of the BIOSPHERE RESERVE

We recognize that environmental problems are not the fault of any particular political jurisdiction, but are part of a global expansionary dynamic of capitalism, and so, are a crisis of the system itself, rather than a crisis within the system. A case can be made that capital abhors all communities but itself. Living things die so a dead thing can grow. This is the eugenics project of modernity.

An example of this transformative process is the conversion of human communities and natural communities along Nova Scotia's coasts into so many units of fish biomass in open pen nets, as when the Doelle-Lahey report states that the production of harvestable fish becomes the best way to assess the success of the industry. All the non-economic realities of ecological health and community wellbeing disappear and what takes their place are the categories that suit capital: the abhorrent conditions that push the outer limits of survivability through technologically-controlled conditions that maximize profitability, and at the same time, erasure of all conditions beyond this merciless economic dynamic.

Ray Rogers, Little Harbour/Arnolds

## UNESCO BIOSPHERE RESERVE

Ray Rogers describes in broader terms the mindset and values of corporate greed in his note on capitalism. The principles that define the UNESCO Biosphere Reserve designation contradict capitalism. Five counties comprise the buffer zone of the Southwest Nova Biosphere Reserve: Annapolis, Digby, Yarmouth, Shelburne and Queens. Eighteen municipal units were required to unanimously endorse the designation of the Biosphere Reserve. All agreed.

Kejimikujik National Park and the Mersey-Tobiatic Wilderness form the core of the Reserve. As the Park Biologist has pointed out, a park cannot exist in isolation. It depends on neighbours to hold similar values regarding how the natural spaces will be utilized. The support of five counties surrounding the core would suggest that the pillars of UNESCO are adopted by the population of this buffer zone.

Industry, culture and environment IN BALANCE is the prerequisite concept for the UNESCO designation. The marine interface is contiguous with the land in Nova Scotia, so that an over-balancing industry in coastal waters is in contradiction with the conservation ethic practiced by the National Park (inland and seaside) just as capitalism is in contrast with the life choices of most Nova Scotians.

The unique geographical, cultural and industrial mix in NS has led to five UNESCO sites, the Bras d'Or Lakes being the second large site, and Joggins, Grand Pré and Lunenburg adding to the list. It is conceivable that the entire province could become eligible, if the ethic adopted in Southwest Nova is shared throughout the province.

The values held by the people are a fundamental starting point for decisions on economic and industrial development. This article in the Chronicle Herald, weekend edition Aug 23 2014 illustrates the point.

<http://thechronicleherald.ca/opinion/1231380-weekend-focus-the-politics-of-pollution>

Gloria Gilbert, Osborne Harbour

## QUESTIONING ECONOMIC BENEFITS

“The draft refers to \$50 million in revenue in Nova Scotia from finfish production. The use of a revenue figure for this industry is a very poor indicator of benefits for Nova Scotians.” (Herschel Specter, Shelburne)

We need the following questions answered:

1. How many real (full time, decent pay) jobs are being created? How many real jobs are being threatened?
2. How much money generated by this industry is staying in Nova Scotia?
3. How much tax is being contributed to the Nova Scotia economy by this industry?
4. How much is the Nova Scotia taxpayer subsidizing this industry?
  
5. How much is the federal taxpayer subsidizing this industry?
6. What are the environmental costs?
7. What are the costs of impact on other Nova Scotia industries? (Including jobs lost in the lobster, wild catch fishery and tourism and the decrease in property values for those residences adjacent to finfish farms)

A full economic cost analysis has to be done. “It is impossible to determine if there is a net benefit to the people of Nova Scotia without such an analysis, let alone indicate a situation of improving benefits and decreasing benefits.” (Herschel Specter, Shelburne) We believe, with what we have experienced in our communities that the balance sheet will be negative-- particularly once the \$129 million??? doled out to the industry to date by the federal government as compensation for diseased fish ordered destroyed is considered in the equation.

“There is no reason to believe that employment in Nova Scotia will increase proportionately to the increase in finfish production. In 2003 the number of full time equivalent jobs (FTE) per million kilograms of fish was 35.8. By 2011 the number was down to 27.1 FTE's per million kilograms of production. When the two sites in Jordan Bay were approved the number of FTE's was only 9.6. Recently it was learned that many of the local people hired for the Jordan Bay sites were let go during the winter months when fish feeding effectively stopped.” (Herschel Specter) According to the Federal Government only 23 out of the 83 finfish sites in New Brunswick are in production. How many sites are in production in Nova Scotia at present? It seems that Mother Nature also understands this as a failed experiment and via storms and disease outbreaks has cut the number of producing sites here as well.

In a September 2010 Chronicle Herald article it was stated by an executive of Cooke Aquaculture that 350 full time processing jobs would be created in Nova Scotia by 2011. It didn't happen. In July 2011, Nell Halse stated in Shelburne at a public meeting that a processing plant would open by the fall of 2012. It didn't happen. In July of 2012 when 25 million dollars was given to Cooke Aquaculture by the previous government, Dexter promised 490 additional full time jobs by December 2015. In order to create 490 new full time jobs an additional 17.9 million kilograms of salmon would have to be harvested each year and it would take about 36 large new sites to be opened.

All of the fish that Cooke Aquaculture harvests in Nova Scotia are processed in New Brunswick. Where is the return on the government's investment then?

In a recent article in a New Zealand newspaper seafood industry boss Peter Talley "has poured cold water on ocean based aquaculture, saying it doesn't have a future in New Zealand". He states that "in a salmon farm 35 percent of your entire revenue is absorbed by food costs." (and this poses another moral argument with most of this feed coming from fish that people have eaten around the world) He states that "if the aquaculture industry really wanted to produce 2 billion in sales it's going to have to be very innovative and finding ways of breeding fish and farming them on shore, not at sea.

The rationale for pushing this failed industry on coastal communities is that it is good for us. We are here to tell you that it is not good for us. We have fished the waters of our harbours for generations without polluting or harming them. The industries that support our communities are the lobster fishery, other wild catch fisheries and tourism. We are not about to risk these backbones of our communities for a fleeting failed experiment. We are interested in economic development but not at any cost. We have ideas. Just ask us and your investment in us will pay off.

Wendy Watson-Smith, Mushaboom

## FEEDLOT PRODUCTS AND HUMAN HEALTH

As coastal communities we are not only concerned about the health of our marine environment and its exposure to antibiotics and pesticides with ocean based feedlots we are also concerned about the health of the product for human consumption. Fish in feedlots are given antibiotics to prevent and/or treat disease outbreaks and fish are bathed in pesticides to suppress infestations of sea lice. The industry in Nova Scotia continues to state that there is no problem with sea lice here but when a sampling of fish was taken from grocery stores sea lice were present.

Lobsters, oysters, crabs and other shellfish become collateral damage in the marine finfish feedlot war on sea lice when pesticides are used in sea cages.

In January 2013 the Canadian Food Inspection Agency (CFIA) for the first time since starting to regulate the industry in 2005, allowed salmon under Infectious Salmon Anemia (ISA) quarantine to be sold to the public. Despite assuring us that there was no threat to human health from ingesting diseased fish the only study that CFIA could produce for justifying their actions was one in which workers handling diseased fish did not become sick. There were no studies of people actually consuming this fish as CFIA advised that that kind of study would be unethical. The US, Europe and Asia closed their doors to the importation of diseased fish but apparently it was safe for Canadians to eat. Canadians are being treated like guinea pigs.

Alexandra Morton (a BC-based authority on salmon) gives lectures about finfish farms and speaks about disease outbreaks. She says that medical professionals have taken her aside and expressed their concern



regarding human consumption of ISA-carrying fish because ISA is an influenza virus. Viruses mutate and become increasingly virulent.

Quantities of antibiotics released into the environment in agriculture and aquaculture are known to result in an increase in antibiotic-resistant bacteria. User fees should be established for antibiotics used in food production as an incentive to encourage better animal management methods and to adopt alternatives to the use of drugs. Another study done in Norway states that women, children and adolescents should avoid eating farmed salmon because the feed contains harmful pollutants. Seachoice which is an initiative of Sustainable Seafood Canada states that farmed salmon should be avoided because of possible elevated PCB levels. It states that children and women of childbearing age should avoid the product entirely.

Some of our members have tried to get information from the CFIA when disease outbreaks occur. This has proven difficult and information is often delayed. In addition consumers are not given any choice as this diseased fish is not labelled. Sobey's stated after one disease outbreak that it would not stock their counters with diseased fish but Cooke was clear in their communications with the public in saying they do not segregate diseased fish from healthy fish. When we have spoken to consumers many people are already boycotting fish produced from ocean feedlots, because of health or environmental concerns.

People are starting to ask questions of fish retailers. People want to know how their fish was raised, caught and whether it is healthy to eat. People want their fish to be labelled so that they can make informed decisions about their seafood choices. We need an independent certification and labelling system for this industry wherein standards are developed independently and enforced with transparency.

What needs to be favoured in our policies and patterns of subsidies and penalties is true sustainability: fisheries that sustain both oceans, communities and health. Bigger and more efficient is not always better. In the North Atlantic lobster and crab fishers have agreed to stick with the time consuming and low tech method of traps and pots even though a team of scuba divers could easily clear out an entire bay full of lobsters in a couple of weeks. Our provincial government needs to stop outlandish subsidies to the open-pen feedlot industry (dominated by out-of-province corporations). Once the artificial supports are removed and once this industry becomes accountable for the full economic costs of production, including taxes, then alternative technologies will become more feasible.

Wendy Watson Smith, Mushaboom

## CLIMATE CHANGE and COASTAL INDUSTRY

In the context of the Doelle-Lahey regulatory review panel, all aspects of climate change relative to the open net pen debate have become critical. Few of us claim any particular expertise when it comes to the scientific and technical aspects of global warming, but all of us recognize the dramatic coastal impacts. How could one fail to notice? The pattern of storm damage has been incredible-- Woods Harbour

salmon site wrecked by storm; Coffin Island site obliterated in 2008; St. Mary's Bay, Jordan Bay, and Coffin Island sites battered by storms in 2013/2014. Only the feedlot operators remain in full-fledged denial.

The concern can be expressed simply: not only do we experience additional storms in Nova Scotia on an annual basis, but perhaps more importantly, the nature of those storms has changed drastically. The storms have a certain fury associated with them that impacts everything in coastal waters and well beyond. It stands to reason that not only are the risks associated with 'escapes' heightened dramatically, but the safety of tightly enclosed feedlot salmon and trout is compromised. Weather and storm events were blamed for unusually high incidence of "morts" or unexplained deaths in the winter of 2013-2014. We know of 500,000 trout escapes at Coffin Island in 2008, and 90,000 at Port Mouton in 2014. Have there been other escapes that have gone unreported? Nets are compromised by predators and storms. Given the severity of the storms experienced, subsequent condition of cages, and washing ashore of cage components/debris in several locations, it is likely. In Jordan Bay, 31 bird nets have been destroyed and/or lost in one year. These nets are hazards to navigation and to sea life and birds. Essentially, they are ghost-fishing when submerged or lying on the seabed.

See evidence of storm effects in these videos:

[https://www.youtube.com/watch?v=u9vOEIcfdqQ&list=UUiRBjd9wntJ\\_ixVWAbUmDaA](https://www.youtube.com/watch?v=u9vOEIcfdqQ&list=UUiRBjd9wntJ_ixVWAbUmDaA)

[https://www.youtube.com/watch?v=Uwlb-lwTRic&list=UUiRBjd9wntJ\\_ixVWAbUmDaA](https://www.youtube.com/watch?v=Uwlb-lwTRic&list=UUiRBjd9wntJ_ixVWAbUmDaA)

The recent post tropical storm Arthur was a revealing case study. Anyone looking out upon coastal waters would have been shocked by the severity of the wave action and the undertow. Other species, most notably lobster, have transitioned increasingly to on-land closed containment options where conditions can be completely controlled successfully. The severity of current and future Atlantic storms demands that feedlot salmon and rainbow trout be transitioned similarly to land-based operations.

Warmer water has been implicated in sea lice proliferation; ISA is on the rise and CFIA has determined that it cannot be eradicated; already three diesel fueled feed barges owned by Kelly Cove Salmon have sunk, one in Bayswater, one near Meteghan and one in Jordan Bay. To date, we are not aware of any attempts to re-float these vessels. Simply stated, the business model of fish in cages in ocean waters is no longer sensible or sustainable and climate change is a key reason we say so. We strongly suggest that the Panel should take this concern as a primary consideration going forward. To borrow a phrase from a recent Minister of Fisheries and Aquaculture.

"These are not your Grandfather's coastal waters ..."

With respect, we must act accordingly.

Stewart Lamont, Tangier

Sandra Hanson, Freeport

The photo below shows cage debris on shore near Freeport:



#### FISHERIES AND COASTAL RESOURCES ACT

Parts of the FCRA may not have been properly implemented by the previous Minister of Fisheries and Aquaculture. Ref: Parts (c) and (f) in Purpose of the Act. It has not been demonstrated that the Minister acted for the betterment of coastal communities or the Province, nor did the Minister foster community involvement in the management of coastal resources.

Provincial law states that the government is required to demonstrate that coastal communities benefit from finfish aquaculture. Without such a demonstration, government is in violation of the law. The Minister of Fisheries and Aquaculture is granted wide discretion in how he implements the law, but in my view, he has no discretion to avoid implementing the requirements put upon him by the law.

Herschel Specter, Shelburne

## REGULATORY ISSUES

*[The italicized portions of this section are included to preserve the continuity of Herschel Specter's work, and out of respect for his knowledge of and experience in regulatory roles. However, there are simple baseline limits beyond which Coastal Community Advocates are unwilling to discuss regulatory details. Until there are absolute limits set on minimum depth requirement, maintenance of oxic conditions, and community endorsement, further examination of regulatory needs is, in our opinion, moot.]*

Review of July 3, 2014 Doelle- Lahey Draft Report on the Regulation of Aquaculture in Nova Scotia – Herschel Specter, Friends of Shelburne Harbour.

### Overview

This draft report is an excellent product from the D-L panel. It is well written, comprehensive, and reflects the high integrity and competence of the authors. The comments that follow are intended to strengthen the final version of this report.

### Comments

#### **1. Red, yellow, and green zones**

One of the observations about the lack of trust that many people have in their Provincial government is that many people are understandably territorial. The history of fin fish aquaculture, in the minds of many that oppose it, is that the Provincial government forced this industry upon them without due process and without scientific or economic justification. *In order to possibly restore some confidence in the government, the exact boundaries of these zones, and why they were drawn that way, needs to be much more definitive than presented in the Panel's draft report. Not to do so invites confusion, continuing conflict, and would likely undermine the Panel's goal to establish confidence in the government. A simple analogy may suffice, also with red, yellow, and green "zones". Traffic lights must be unambiguous in the messages they send out. People cannot be unsure that they must stop their cars when the light turns red. Anything less clear than that raises questions about adequate governance.*

*Drawing definitive boundaries will cause conflict on its own, but likely far less than being vague. As matters stand now the draft report does not indicate who shall establish the exact boundaries and by what method, and whether the depth and current flow siting criteria, if used, will be uniform across the Province. The draft document does not discuss the relationship between site depth and current flow to initial stocking levels, or the need to proceed according to the Precautionary Principle, e.g. raise stocking levels after each production period until equilibrium oxic conditions are obtained instead of starting at too high a stocking level and decrease this number in subsequent production cycles...the damage would already be done.*

*The following suggestions on what might improve matters contains a mix of risk based and prescriptive regulatory processes, as does the draft report. The Panel's draft document already contains many prescriptive requirements such as the separation of promotion and regulation, in curtailing Ministerial acts of deference, in the need to have transparency, etc. All of these prescriptive requirements are non-numerical. However, there is almost no numerical prescriptive requirements and the danger here is that in specific instances this may lead to confusion and conflict, especially in the case of establishing different fin fish aquaculture zones. Succinctly, numerical prescriptive requirements are essential in the establishment of different zones if trust is to be regained in the government. Further, the aquaculture industry also is asking for greater certainty. The guidelines presented below should also be a positive step in meeting the wishes of the industry.*

*The final version of the Panel's work should show a map of Nova Scotia with the red, yellow, and green zones identified. If such a map is not practical, then definitive, numerical guidelines should be given. Optimally, both the map and the guidelines would be part of the final document.*

*The following guidelines are suggested:*

*Red Zone: No fin fish farms larger than 50,000 fish in the red zones. A red zone is any location where the mean low water depth averaged across the site is less than 15 meters or if the mean current speed near the sea bed is less than 5 centimeters per second.*

*Yellow Zone: Any location with a mean low water depth averaged across the site is less than 30 meters or a mean current speed near the sea bed is less than 10 centimeters per second. An initial DEPOMOD analysis would be conducted for the first three production cycles. The purpose of this DEPOMOD analysis is to estimate what the initial fin fish stocking level should be in order to stay within oxic conditions.*

*Green Zone: Any location with a mean low water depth average across the site greater than 30 meters and with a mean current speed greater than 10 centimeters per second. The first few sites placed into the green zone should have DEPOMOD analyses to determine initial stocking levels. However, if after several production cycles these initial sites prove to be acceptable, applicants may seek new licenses by referencing these sites and showing that the proposed new sites have equal or better depth and current speeds. The stocking levels of these new sites would be limited to the same stocking levels as in the sites that were referenced. This simplification avoids the need to run DEPOMOD analyses and decreases uncertainty.*

*Justification for the above red, yellow, and green recommendations:*

*The red zone depth and current flow limitations are based on peer-reviewed science. Comparisons of these science-based limitations to many actual sites on Nova Scotia's south shore has been done. This comparison showed a very good correlation between the published science depth and flow limits and actual operating history of many of these sites. Where depths or current speeds were less than those recommended in the scientific literature, these sites exhibited unacceptable results. Previous DFO siting reports also used depth and current flow criteria. The aquaculture industry cited poor depth and flow conditions in Shelburne Harbour as their justification for shutting down all the old sites in the harbour, with the claim that new sites in the harbour had better depth and flow conditions. The panel's draft also refers to the importance of depth and current flow. Therefore there seems to be unanimity on the importance of depth and current flow.*

*Since there is across-the-board agreement on the importance of depth and current flow, backed up by good science and actual operating history, and the need to remove uncertainty voiced by the public and*

*the industry alike, the final report must provide definitive numerical depth and flow requirements to avoid a larger conflict.*

*The recommended regulatory requirements above are graduated in keeping with the approach in the Panel's draft document. The regulatory burden for the green zone would be minimal and eventually could be no more than showing equivalency with other acceptable sites in the green zone. The yellow zone is more restrictive than the green zone, but less so than the red zone which would forbid fish farms larger than 50,000 fish. The regulatory burden in the red zone would only apply to very small fish farms. Since the stocking level would be less than 50,000 fish, there would not be a need for a DEPOMOD analysis and the performance of the site would be determined by monitoring.*

## **2. Industry concerns**

The draft report refers to industry concerns about a cumbersome and sometimes self conflicting regulatory process that has retarded its growth. This could well be true at the federal level where so many federal departments are involved in aquaculture. It is not true in Nova Scotia. For many years the aquaculture industry operated in Nova Scotia essentially without meaningful regulation and, instead, just enjoyed constant promotion. Dead zones were created, fish cages sprawled outside of their legal lease boundaries, local opposition was basically ignored, the public's questions went unanswered, and generous subsidies were given using public tax dollars. The former Premier and the former head of NSDFA promoted the aquaculture industry as a pathway to greater employment, yet never insisted that in the meanwhile all salmon grown in Nova Scotia's waters be processed here in idle facilities which would have provided some needed jobs. In spite of this past industry ideal regulatory climate in Nova Scotia, there wasn't a huge increase in the production of fin fish here.

It appears that the growth rate of fin fish aquaculture has been far more limited by nature, than by regulators. ISA has caused huge numbers of "morts". The causes of ISA are not fully understood and therefore the means to prevent it are inefficient. Sea lice have been a major problem in New Brunswick and may get worse in time due to climate change that causes warmer water and the fact that some pesticides are becoming less and less effective. Placing large numbers of fish in a confined space but open to sea lice is a magnet for such problems. It is the industry's choice to concentrate so many fish in such a small volume. Major storms have damaged fish cages and have led to fish escapes. Climate change has warmed sea waters. Aquaculture industry representatives have testified this year to the Canadian federal senate that many fish farms in New Brunswick have ceased operating because water temperatures have gotten too high in parts of the Bay of Fundy.

Over regulation may be a federal problem, but it is not one here in Nova Scotia. Lack of sufficient growth in fin fish production is largely brought on by nature and by choices made by the fin fish industry itself. Because of this, less weight should be given to industry complaints when completing the final version of this report.

## **3. The financial benefits of fin fish aquaculture**

The draft report refers to \$50 million dollars in revenue in Nova Scotia from fin fish production. The use of a revenue figure for this industry is a very poor indicator of benefits for Nova Scotians. This is because only a very small percentage of this money ends up as paying for labour. The bulk of this revenue goes into profits for the owners and the cost of feed. An economic study of fin fish aquaculture by DFO in 2011 makes this clear. For each dollar of revenue 25.2 cents ends up as profit. For each dollar of revenue only 6 cents goes to labour. So profit exceeds labour costs by over 400%. In the particular case of Nova Scotia fish processing is done in New Brunswick as is the hatchery process. So even the full 6 cents for labour doesn't end up benefitting the people of Nova Scotia.

The draft report calls for a future of increasing value and decreasing environmental damage. There is no reason to believe that this goal will be fulfilled by open net fin fish aquaculture. Without dispute, more fish farms means more of the public's waters come under private control and more fecal matter is generated. There is no reason to believe that employment in Nova Scotia will increase proportionately to the increase in fish production. In 2003 the number of full time equivalent jobs (FTE) per million kilograms of fish was 35.8. By 2011 the number was down to 27.1 FTEs per million kilograms of production. When the two sites in Jordan Bay were approved the number of FTEs was only 9.6. Recently it was learned that many of the local people hired for the Jordan Bay sites were let go during the winter months when fish feeding effectively stopped. Low labour costs in Chile and elsewhere and increasing automation will continue to drive this number down.

What is missing is a public document from NSDFA that basically is a business plan that spells out the projected number of jobs and their pay rates, the number of sites needed to support these jobs and the total number of kilograms of salmon that would be produced, the time line over which this might happen, the impact of automation, whether or not the aquaculture industry plans to sink in their own funds or rely on taxpayer dollars or just rent facilities, etc. It is impossible to determine if there is a net benefit to the people of Nova Scotia without such an analysis, let alone indicate a situation of improving benefits and decreasing detriments.

It is recommended that the Panel ask NSDFA to produce such a public document. Such a document would be in keeping with the goal for transparency.

#### **4. Oversized sites**

It is recommended that the Panel make clear its position on oversized fish farm sites. While the NDP was in office it granted unprecedented oversized sites. For example, the Jordan Bay and Blue Island sites are 40 hectares each. The actual area occupied by the fish cages are only 7% of this oversized area.

On page 1231 of the Minister's record of Specter vs. the Minister of NSDFA the following is stated under Section 5.0 Further Mitigation Plans: "If sediment sulphide levels become elevated, KCS will explore the option of adding more cages to the site. The fish stock could be split and moved to different portions of the lease area to allow any unacceptably impacted areas of the seafloor to be fallowed prior to the end of a production cycle."

In the past KCS (Kelly Cove Salmon, Ltd.) dealt with "unacceptably impacted areas" by relocating the sites short distances away, as they did with three sites in Shelburne Harbour. Among other things, this precipitated a lawsuit before the Supreme Court. With oversized sites this is not necessary, but does result in an even larger area exposed to environmental degradation. Further, under this scheme areas within the oversized lease where fish cages are moved from will begin to show declining sulphide levels, even though the benthic damage may remain high. If only judged by low sulphide levels, KCS could return to the original cage locations and start the whole process over again.

Does the panel support the licensing and operation of oversized leases in the manner described above? If not, what course of action does the panel recommend?

Will the panel discuss in their final report the fact that sulphide readings are unreliable during and after a fallowing period because they no longer reflect the damage done to the benthic life on the seafloor and that other parameters have to be measured for meaningful regulatory decision making?

#### **5. Need to report the number of "morts".**

Will the Panel include in its final report a recommendation to have NSDFA get monthly reports from each fish farm site on the estimated number of morts? This is an important indicator of fish health, site

performance, and economic performance and can be accomplished at little to no expense and with considerable accuracy. All it would require is that a video be taken any time morts are removed from a site and the number of buckets of morts, which can then be converted to the mass of the morts removed.

#### **6. Separation of fish farms to improve bio-security.**

Does the Panel have a specific distance that fish farms should be separated? If so, what does the Panel recommend be done with existing fish farms that are not sufficiently separated? Bay Management has been claimed by the aquaculture industry as a useful means to reduce bio-security issues, like ISA. In its meetings with industry representatives was there any explanation as to why Bay Management wasn't practiced at Harbour Breton in Newfoundland before it was shut down because of ISA. Bay management doesn't seem to be practiced in Nova Scotia in spite of the loss of large numbers of salmon at McNutts Island in Shelburne Harbour and more ISA losses at Coffin Island. Did industry representatives explain why Bay Management apparently isn't practiced here? What happens if there is another fish farm, perhaps from another company, within the same area mapped out by a Bay Management plan? Does this negate the value of the plan?

#### **7. Twenty year lease**

The need for a lease of specific duration may not be necessary in a modern regulatory scheme. As long as the fish farm is operated within acceptable limits, its lease should continue. If the farm is not operated in an acceptable manner, its lease should be terminated. What is gained by having a specific lease duration?

#### **8. A caution**

On the bottom of page xvi of the Executive Summary there is the statement that "operations that do get approved will have to meet additional terms and conditions, such as additional monitoring and reporting obligations". In the past additional monitoring was suggested as a way to deal with situations where acceptable limits were exceeded. This concept was vigorously resisted since monitoring is not mitigation. It would be beneficial if additional clarifications were made stating that these additional requirements are not a substitute for staying within acceptable limits. A clear path to shutting a site down if it exceeds acceptable limits would be helpful.

Herschel Specter, Shelburne

## WILD ATLANTIC SALMON

Massive escapes of millions of aquaculture fish are scientifically implicated in the decline of wild salmon. The problem is accepted as very real and has been substantiated by multiple studies in Europe, under the governments of Norway, the UK and Ireland. It is officially denied in Canada (although several Fisheries and Oceans studies do express concern) yet the timing and location of salmon feedlots on the



east coast are highly suspect in the complete loss of wild salmon to 33 rivers flowing into the Bay of Fundy.

The research document linked below is shared in the Atlantic Salmon Federation newsletter. It is one example of the ongoing effort to understand and restore wild Atlantic salmon populations.

The Estuarine and Early Marine Survival of Atlantic Salmon: Estimation, Correlates and Ecological Significance.

To read click on the following link:

[http://dalspace.library.dal.ca/bitstream/handle/10222/53777/Halfyard\\_Edmund\\_PhD\\_BIOL\\_June\\_2014.pdf?sequence=3](http://dalspace.library.dal.ca/bitstream/handle/10222/53777/Halfyard_Edmund_PhD_BIOL_June_2014.pdf?sequence=3)

"A Case Against Open-Net Salmon Farms - an editorial by John Randolph, editor of Fly Fisherman Magazine"

*"We have all the science we need now to prove that open-net-pen farming of Atlantic salmon is not working—dozens of studies from recognized scientists that document the threats of repeated outbreaks of disease in the farmed fish, the damage to wild salmon populations, and the pollution to the environment caused by the farms. We have lost the wild salmon in most of the New Brunswick and Nova Scotia streams flowing into the Bay of Fundy, where the largest number of open net-pen farms exist. The Bay of Fundy wild-salmon populations began their decline coincident with the growth of open net-pen salmon farming in the '80s and '90s. The disappearance of wild salmon in the Magaguadavic River in New Brunswick is a science-proven prime example of the effects nearby open net-pen salmon farming can have on a river's wild-salmon population. They disappeared. - Bill Taylor, Atlantic Salmon Federation*

To read the editorial in its entirety click on the following link:

<http://www.flyfisherman.com/conservation/case-open-net-salmon-farms/#ixzz3BdQFFqZY>

Jim Gourlay, Stewiacke

Darrell Tingley, Lunenburg

Larry Shortt, Sackville

## BIOSECURITY

**"Biosecurity** has multiple meanings and is defined differently according to various disciplines. The original definition of biosecurity started out as a set of **preventive measures designed to reduce the risk of transmission of infectious diseases in crops and livestock**, quarantined pests, invasive alien species, and living modified organisms (Koblentz, 2010). The term was first

used by the agricultural and environmental communities. Starting from the late 1990s in response to the threat of biological terrorism, biosecurity encompasses the prevention of the intentional removal (theft) of biological materials from research laboratories. These preventative measures are a combination of systems and practices put into its place at legitimate bioscience laboratories **to prevent the use of dangerous pathogens and toxins for malicious use, as well as by customs agents and agricultural and natural resource managers to prevent the spread of these biological agents in natural and managed environments.** More recent definition with advances in technology also involves oversight of dual-use research (Koblentz, 2010). Dual-use research has the potential to create new health security issues. The most inclusive definition of all would be biosecurity as defined by The National Academies of Science (Koblentz, 2010). This definition is analogous to that of health security. Although security is usually thought of in terms of "**security against the inadvertent, inappropriate, or intentional malicious or malevolent use of potentially dangerous biological agents or biotechnology, including the development, production, stockpiling, or use of biological weapons as well as outbreaks of newly emergent and epidemic disease**" "Guards, Gates, and Guns", biosecurity encompasses much more than that and **requires the cooperation of scientists, technicians, policy makers, security engineers, and law enforcement officials.**

## **Food and Agricultural Organization of the United Nations GAP**

The Food and Agricultural Organization of the United Nations (FAO) uses **Good Agricultural Practices (GAP)** as a collection of principles to apply for on-farm production and post-production processes, resulting in safe and healthy food and non-food agricultural products, while taking into account economic, social and environmental sustainability.

GAPs may be applied to a wide range of farming systems and at different scales. They are applied through sustainable agricultural methods"

(Above from Wikipedia)

Fish growers say they're farmers-- well, farmers know the following about biosecurity:

### **Containment of populations**

Whether age-class or site segregation, or both, food animals are protected from introduction of contaminants by physical barriers and the avoidance of cross-contamination by workers, veterinarians, feed suppliers, truckers.

### **Segregation / quarantine**

imported animals are separated from domestic until testing is completed; separate facilities, caretakers, all equipment

### **Cleaning**

facilities are disinfected, cleaned, dried and left to sun and air between crops

**Manure management**

containment, composting, high-temperature drying (chicken barns)

**Restriction of visitors**

no access without authorization, no farm-to-farm visits

**Recycling of by-product or culls**

cross-species contamination tightly controlled

What we know for sure:

CFIA acknowledges that ISA cannot be eradicated.

Some strains of ISA are more virulent and mutate readily.

CFIA allows marketing of asymptomatic fish from sites that test ISA positive

ISA is contagious to trout, wild salmon of every species, herring

There are other viruses and bacterial infections in feedlot fish, equally contagious

Conditions that stress fish are hotbeds for disease and parasites

Treatments are additional stressors

Drug and chemical residues are contaminants to the environment, Antibiotic-resistant bacteria can develop where antibiotics are used.

Many species, especially larval forms, are vulnerable to drugs, chemicals, pesticides

Feed additives can become concentrated pollutants (copper, zinc)

Nutrient overload (nitrogen/phosphorus) in nursery environments is a pollutant

Escaped fish from feedlots are hazardous due to potential disease transfer, competition for habitat and food, and genetic dilution of well-adapted local species.

Transfer of fish at every stage of production presents escape opportunities.

Birds (mainly gulls) are attracted to feedlots and can carry contaminants far from the sites

Birds can add e-coli where they roost or congregate (ponds and beaches)

Feedlot "footprints" that overlap can create biohazards throughout a harbor

Bay management and year-class separation have failed to control sea lice and ISA

Offal and by-products from feedlot fish processing are a biohazard

This film by Ron Neufeld and Kathaleen Milan illustrates the typically lax attention to biosecurity measures on fish-growing sites.

<https://www.youtube.com/watch?v=6ClwlsJ4Qlo&feature=youtu.be>

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Gloria Gilbert Osborne Harbour

#### OPPORTUNITY KNOCKS

Appreciation is freely proffered to the panel for the integrity of its review of the fin fish aquaculture industry as it currently exists in Nova Scotia.

The responses in this submission are respectfully submitted to the panel's work as a wide-ranging analysis of the findings from a broad variety of sources across the spectrum of Nova Scotia society.

The focal points are summarized as follows:

1. The opportunity for Nova Scotia, with its reputation for pristine ocean waters, to become a world leader in land-based fin fish aquaculture appears to have been given low priority by the panel. While some significant players in the industry appear to have begun to embrace this new technology as the future, Nova Scotia appears willing to hitch its wagon to what may, within a few years, be a buggy whip industry rendered redundant as an inefficient, polluting activity producing chemical-laced food products the consuming public is increasingly rejecting.
2. No broad-based, accurate, independent financial analysis of the ocean-based fin fish aquaculture exists. Such an analysis must be undertaken so decisions on the future of this industry are based on established facts rather than supposition and propaganda submitted by an industry that employs a huge public relations machine.

This analysis should include, at a minimum:

- Accurate job creation statistics as opposed to industry promises.
- Estimated costs (and related job losses) to other industries, including the lobster fishery, tourism and sport fishing.
- Environmental costs, including chemical pollution and coastline fouling.
- Government subsidies, including provincial grants and loans and federal subsidies for stock losses due to disease.
- A recommendation as to how the Government of Nova Scotia should proceed if such an analysis determined ocean-based fin fish aquaculture is a net loss to the provincial economy.

3. There is no proposed solution to the “attitude” problem whereby provincial bureaucrats, who depend upon the industry for their livelihoods every bit as much as direct employees of the industry, have been permitted to act in the interests of the industry often at the expense of the interests of the public they are paid to serve.
4. The related requirement of the Government of Nova Scotia to assure it has “social licence” at all times to proceed in the encouragement and facilitation of an industry that is highly controversial wherever on the planet it has developed, and may present negative consequences for communities, for individuals and for other industries.

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