

**A Closed Containment Analysis :
More Open Minds Required Maybe ?**

**A Review of the Gardner Pinfold Study :
“ Feasibility of Land-Based Closed-Containment
Atlantic Salmon Operations in Nova Scotia . ”**

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Forward :

My review asserts no particular economic or engineering expertise . It does however claim to have a unique window on the world of land- based closed- containment (LBCC) salmon production models from the perspective of a lobster stakeholder . It turns out that the LBCC model for salmon is amazingly like that of lobster storage . Whereas 25 years ago the predominant method of holding lobster beyond production seasons was (ironically) in natural ocean pounds , the current and overwhelmingly common method of storing live lobster is in ‘ dry land ‘ facilities . Like the LBCC , this lobster model relies upon applied science and technology , and the relatively easy ability to monitor live inventory 24/7 in a temperature , oxygen and ammonia controlled environment . The lobster facility and the LBCC are both – at their core - highly sophisticated waste water facilities . One simply maintains the health of a product and the other actually grows it , but the principles and their applications are shockingly similar . Lessons learned in live lobster over the past three decades can readily be applied to the LBCC model today . We simply need an awareness of the similarities and a motivation to study the potential applications . It is an effort that should have happened yesterday

From a lobster perspective we have learned that none of this is rocket science . The on land facility is a model that is completely viable from both an operational and financial perspective . It is the view of this critique that Government and Industry would do well to consider the parallels and learn from advancements in live lobster technology in Atlantic Canada in the past three decades . The dry land lobster facility expertise in Nova Scotia is incredible and substantial . It is both theoretical knowledge and more importantly practical experience . Companies know what works and unfortunately what doesn 't . Technical advances are made continuously and cost efficiencies have been the beneficial result . It is a success story which should be studied carefully relative to the on land production of Atlantic Salmon . It would be a better day indeed in which Atlantic Salmon could learn from Lobster technology and Lobster could learn from Atlantic Salmon . A better business model and favourable technology transfers could be the inevitable result for both enterprises . It is so patently obvious , we probably can't do it

Where to begin ?

Gardner Pinfold , the authors of this particular study , are an exceptionally capable group of consulting economists . We are very familiar with their body of work in the seafood sector, most particularly their most recent analysis of the business of Canadian Lobster (“ Long Term Value Strategy “) . Their analysis is generally well founded and extraordinarily helpful .

On this particular topic and this particular study of LBCC , we are somewhat critical however . This may not be Gardner Pinfold's finest work , in fact far from it . Many of the assumptions have shortcomings . Many of the conclusions must be put in some further context . And the entire Report seems – no pun intended – watered down and a bit thin . One gets the sense the authors are looking for ways in which this LBCC model cannot work , rather than ways in which it can . Would that they were equally as critical of the controversial alternative ... open net pen .

Closed containment models can be analyzed from A-Z and critiqued in so many respects but first and foremost one must analyze this model relative to the ' costs ' of traditional open net pen aquaculture . The ' externalities ' as economists are prone to call them – such a benign phrase for disease, escapes , toxins and massive pollution – are the key benchmarks for a legitimate comparative analysis . If there is a single overwhelming criticism of the Gardner Pinfold Report on LBCC it is that the costs of these externalities are not stated in BOLD TYPE . It is more that they are hinted at – and subtlety in this line of work is clearly not sufficient . Subtlety does not does the trick when you are confronting feedlot opportunism

A true cost accounting approach is called for and all of the direct and indirect costs of the various models should be placed squarely on the table . Anything less is a disservice to the study and inevitably disappoints the reader

Simply stated : an LBCC feasibility review cannot possibly be done in relative isolation . It must be a specific , value- laden , best effort possible, number crunching , true cost comparison

Where we agree :

Gardner Pinfold (GP) acknowledge that LBCC technology works for the growing of a variety of species , including Atlantic Salmon . Salmon is the least proven of them all one might say, but technical feasibility is increasingly proven and demonstrated . GP point to various projects in various jurisdictions including our own Sustainable Blue for evidence . Clearly there have been 'growing pains ' , but GP agree it is now technically feasible . So let's simply move on to the bones of contention so to speak

Where we take fundamental issue :

Gardner Pinfold suggests that what this Study really comes down to is the following :

“ Considering industry expectations for financial returns and ability to attract investment , is land-based closed containment Atlantic Salmon farming feasible in rural Nova Scotia ? ” ... (p.1 Introduction) .

Well , isn't that something ? You could write an entire study based upon the historical “ expectations ” of the feedlot sector . They have wanted and received a low cost, high return open net pen model in which losses are somehow compensated for by the Government and the Consumer . They pay peanuts for an ocean lease, they are haphazardly regulated , they have been assisted with lucrative financial supports and compensation for disease , and they are promoted and subsidized by the taxpayer . Measured against that

particularly tainted yardstick , it is not shocking that LBCC might have a problem demonstrating comparable financials with the traditional open net pen version . But if held to a legitimate true cost accounting standard ? Open net pen might be dismissed from the ocean immediately and LBCC embraced as a sustainable alternative .

Gardner Pinfold reveal their conclusions (and arguably their mind set) with the following :

“ LBCC systems operate at an economic disadvantage because much of their cost goes toward creating growing conditions occurring naturally within the ocean , including the chemical properties and temperature of ocean water , as well as current and tidal action that provide waste dispersion services . “

(“ Concluding Observations “ – page 34....)

How can we put it tactfully ? Let’s simply say that this GP study is not in the judgement business . Not in the least . They never state that use of the ocean as a septic system may be in real terms , bad business and costly . They never suggest that the waste dispersion part may not be working either . What “ occurs naturally within the ocean “ comes with extraordinarily high costs . Those costs are never contemplated much less revealed in this particular study . It is astounding that this factor is not taken into active consideration . Undoubtedly the financial viability of the LBCC model is significantly weighed down by this glaring omission

Bits and Pieces to chew over :

One wishes this GP study on LBCC would have been , for lack of a better phrase , more broad minded . Very specifically :

- 1) Governmental Cost and Subsidies : GP acknowledges that both open net pen and LBCC have been the beneficiaries of governmental assistance in a variety of forms . They provide some tables, but they concede due to data limitations and confidentiality it is hard to spell out in its entirety . No doubt about that aspect . Governments have gone out of their way to try to hide investments and loans and subsidies and compensation for open net pen Aquaculture . Investments in LBCC technology tend to be more visible because governments are less anxious to hide them .

Regardless , and most important of all , this study does not attempt to address the aggregate level of public investment in open net pen , and whether that group would

even be here today had those dollars not been invested over the course of the last twenty five years . Hundreds of millions of dollars have gone into open net pen ' investments ' from a variety of sources in a variety of ways . Some transparent , others anything but . The most recent was the \$ 25 Million given to Cooke Aquaculture in Nova Scotia by the Dexter Government for open net pen processing potential . The Auditor General commented gravely on this undertaking . He was to put it mildly – very disappointed with all aspects of the transaction . Gardner Pinfold only includes it in a minor table and doesn't document it clearly . Is it shocking that the LBCC model is at a disadvantage without such monies on their side of the equation ? Can you possibly do a legitimate comparison or evaluation of LBCC without this aspect front and centre ?

- 2) The GP study suggests that to the extent the LBCC model might work, it must be of a very substantial scale . One is tempted to suggest that if the assumptions based upon cumulative governmental assistance are mistaken, and understate the benefits that have been received to date, the resulting conclusions on such aspects as ' scale ' required for LBCC success will be mistaken as well . An arguably bogus model is setting bogus standards so to speak . It contaminates the entire process like a virus

One is tempted to ask the authors whether they are familiar with the merits of " limited production " branding and marketing ? Whether it is chocolate or wines or leather handbags , so many products achieve a huge price benefit from being limited production concepts , even if that limited production is actually substantial volume . One is particularly tempted to say that this model of LBCC Salmon is an ideal vehicle for limited production marketing . Producers have the opportunity to fine tune their own particular sustainable Atlantic Salmon brand based upon location, appearance and composition . The traditional benchmarks for profitability relative to " scale " can largely be thrown out the window in such circumstances . This is a sustainable product all of a sudden , one very much different than feedlot salmon . A story can be honestly told that differentiates the product – and a price point very much higher can be achieved as a consequence . There are so many products the authors could have pointed to where the market achieves a price premium . The authors assume a price to producer no greater than that of feedlot salmon generally . The authors ' assumptions , with all due respect , badly underestimate this price potential . Take a look at Whole Foods and what they pay for specialty items ... and tell me I am mistaken .

- 3) The GP study acknowledges that the potential exists for a LBCC product to achieve consumer popularity and a higher price point , but ' tastes and preferences may change ' . So they advocate caution in this regard. With the greatest of respect , I think they are out to sea here also . They suggest that the mission to sustainable seafood has been driven by corporations not consumers to date . But they don't particularly acknowledge that Corporations are incredibly influenced by their customers and shareholders every

single day .The drive to sustainability and traceability in the seafood sector has been the dominant theme of the last ten years . LBCC is an obvious next step for Atlantic Salmon production . Safeway is one chain that removed open net pen products from its seafood offerings and others are sure to follow . Consumer awareness of these issues grows exponentially . Anyone who suggests otherwise is – dare I say it - out of touch with consumer reality . From the standpoint of trending consumer demand ? LBCC is a model whose time has come .

- 4) The GP study focuses upon higher capital expenditure costs for LBCC projects . Higher than what ? Higher than the ocean at a lease of a few hundred dollars annually ? Absolutely . There is no way around that . But the ocean is highly inefficient . Temperatures change in the ocean , requiring 4-6 months longer production time . Storms come in the ocean, causing escapes to happen regularly . What % of escapes takes place in an open net pen during a production cycle ? Ten % maybe ? Twenty % ? More possibly ? What is the cost of those escapes, particularly if they occur close to the time of harvesting ? What % of LBCC product escapes ? ZERO . Would those zero escapes help to compensate for the escapes in the ocean ? Do we put a value on the damage those escapes can do in diminishing the genetic strain of wild salmon ? Do we care about this whatsoever ? Clearly Nova Scotians care about the state of their wild salmon stocks and the influence of genetic challenges . This aspect never seriously comes up in the study unfortunately
- 5) The only real acknowledgement of comparative ' values ' is stated on p 6 in its brief summary of 'external costs ' :

“ They are called external because the producer does not pay for them . To the extent these costs in the form of environmental or ecosystem damage occur , they become costs borne by society . “

Costs borne by society . A memorable phrase indeed . Would it have been too much to ask for that a system that does not pay for the damage it causes would be subject to some type of censure , even by consulting economists ? That the damage would be highlighted and even a number placed upon it ? Do we care to speculate what that number might actually be ? Would Gardner Pinfold ever consider a supplementary chapter entitled True Cost Accounting in the Open Net Pen Sector ? The omission and mindset is simply overwhelming

Conclusion :

The Gardner Pinfold feasibility endorsement of LBCC is lukewarm at best . It acknowledges that growing Atlantic Salmon in a LBCC facility is probably workable from an operational standpoint . They question whether it works in terms of return on investment . And if it does work financially, they insist it must be done on a large scale . ‘ Go Big or Stay Home ‘ is the mantra apparently

I protest . This study is much better at identifying the uncertainties and limitations of LBCC than it is documenting the obvious evils of Open Net Pen . You cannot consider one without considering the other . It is a timid approach to the overall topic that should be much more creative . For instance, we have underutilized fish plants in Atlantic Canada which could be retrofitted for LBCC at a fraction of the normal capital cost . Did the authors think of that factor and investigate it even a little bit ? We have a coastal workforce in areas with under utilized fish plants . Those folks have rubber boots and a seafood mind set . Did they think of that aspect and investigate it as well ? More to the point , what else did they forget of consequence in this analytical project ?

Ironically , the feasibility of land based closed containment salmon is not entirely pure economics . This is a topic which blends history, geography, sociology and a sense of environmentalism with the concern for coastal community and long term survivability .

Gardner Pinfold are normally experts crunching the numbers and assessing the business model . Not this time sadly . At best this Report is a work in progress . The authors are far too close minded to the potential of Closed Containment . Someone should send them back to the drawing board with instructions to open their eyes a bit
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