AMENDING SEA LICE LICENCE CONDITIONS TO BETTER MANAGE SEA LICE THRESHOLD EXCEEDENCES

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The marine finfish aquaculture licence regulates sea lice at marine fish farms through the authority of the *Pacific Aquaculture Regulations*. The present licence conditions set a sea lice management threshold of three motile *Lepeophtheirus salmonis* (*Lep*) in order to minimize impacts on wild salmonids. However, there are no specific conditions outlining a maximum time period to be met to reduce the sea lice count and to what degree the absolute sea lice inventory must be reduced if the threshold cannot be met during the March 1 to June 30 time period when a majority of smolts migrate from their natal streams and are at the highest potential risk of being impacted by sea lice. There is also no condition requiring the licence holder to reduce sea lice levels back to the three motile *Lep* threshold.

At present there are few options available to the aquaculture industry to reduce the absolute sea lice inventory and those available can result in the potential for sea lice resistance (SLICE) or take a substantial period of time to implement and complete. Second year fish typically have a higher lice burden than first year fish and harvesting is more often the chosen option for these fish. Information from past events where harvesting was the chosen option to reduce absolute sea lice inventory indicate that, for a variety of reasons, harvesting took a significantly long period of time to implement and complete. As well, the amount of fish harvested [redacted] and although the "letter of the law" was followed the intent was not necessarily met. As a result harvesting may not effectively reduce the absolute sea lice inventory to the degree that the risk to migrating smolts is reduced.

The three motile Lep threshold has occasionally been exceeded during this time period over the past several years, however the level of exceedance was particularly high at a number of farms in 2015 and again in 2017 and the licence holder response in reducing the absolute sea lice inventory was, in the Department's view, not reactive enough.

The focus of this document is to explore options to:

a. impose specific time frames/actions whereby absolute sea lice numbers are significantly reduced in a short period of time if thresholds are exceeded during the March 1 to June 30 time period;
b. add a licence condition requiring the three motile *Lep* threshold be met within a certain period of time if harvesting is not the chosen option;
c. explore possibility of pushing back the heightened sea lice sampling period (March 1 – June 30) to January 1 with a requirement to have sea lice numbers below the three motile Lep threshold before March 1;

s.21(1)(a)
s.21(1)(b)

d. review monitoring requirements in the July 1 - December 31 period when sea lice abundance increases due to migration of adult salmon;
e. Combination of (c) and (d).

The specific licence conditions that relate to this issue and that may have to be amended are as follows:

6.4 Starting March 1, 2017, the licence holder must conduct annual sampling between March 1 and June 30 for the term set out in this licence. The licence holder cultivating Atlantic salmon and trout must carry out a sea lice abundance assessment every two weeks, at minimum, for fish held in containment structures for more than 30 calendar days. Where data collected in Appendix VI-A indicates the sea lice abundance threshold of three motile *Lepeophtheirus salmonis* has been exceeded, the licence holder must:

(a) within 15 calendar days of the discovery, implement a plan which will reduce the absolute sea lice inventory within the containment structure array; and

(b) notify the Department as per section 7.1 and 7.3.

and

6.5 Starting July 1, 2016, the licence holder must conduct sampling annually between July 1 and February 28 for the term set out in this licence. The licence holder cultivating Atlantic salmon and trout must carry out a sea lice abundance assessment once every month for fish held in containment structures for more than 30 calendar days. Where data collected in Appendix VI-A indicates the sea lice abundance threshold of three motile *Lepeophtheirus salmonis* has been exceeded, the licence holder must:

(a) increase monitoring to at least once every two weeks;

(b) within 30 calendar days of the first discovery, provide a plan to address the exceedance to the Department, for its considered response; and

notify the Department as per section 7.1.

There are a limited number of potential avenues to impose conditions on the marine aquaculture industry to better manage sea lice such that thresholds are below the three motile *Lep* threshold prior to March 1 and to reduce the absolute sea lice inventory in a more timely and responsive manner when they are exceeded:

1. Changing Licence Conditions – Marine finfish aquaculture licences were issued on June 30, 2016 for a six year period with the exception of those farms in the Discovery Islands which continue to have one year licences. Licence conditions can only be changed if the licence holder applies for an amendment, the licence expires or for conservation reasons if the Department concludes that the aquaculture industry is impacting a fishery(s). The only other option would be for the Department to convince licence holder to request their

licences be amended to reflect stricter conditions to manage sea lice. There are two aspects of conservation that need to be considered. One is the protection of wild salmonids on a population basis and the second is the protection of cultured fish which by legal definition is considered a fishery. Clarification will be required on what constitutes a population with regard to cultured salmon.

Pro:
-Licence conditions are enforceable;
-Support by the public;
-The possibility of litigation by ENGOs or First Nations reacting to high sea lice numbers may be reduced;

Con:
well this is why DFO continues
-DFO Science has indicated there is no direct correlation between increased sea lice numbers on cultured salmon and smolt mortality. As such, changes to licence conditions for conservation reasons are not likely to be successful or supported;

2. Bulletin – The present license conditions 6.4 and 6.5 do not outline specific actions or time frames if the three motile *Lep* threshold is exceeded. A bulletin is a "soft" approach that has been used by AMD to more clearly define licence conditions when they are potentially vague or when there are exceptions. It is voluntary in nature as the licence holder cannot be forced to follow the direction in the bulletin as it is not a legal document. This could be considered a short term solution until the licence conditions can be amended or there are changes to the *Fisheries Act* and/or *Pacific Aquaculture Regulation*.

   Pro:
   -Easy to implement over a short period of time;

   Con:
   -A bulletin is not enforceable and has recently been used to further explain an existing licence condition rather than imposing a new condition(s);
   -Industry unlikely to agree to some of the changes being proposed;

3. Change to *Fisheries Act* (FA) or *Pacific Aquaculture Regulation* (PAR) - Amendment to the FA or PAR to give the Department authority to make changes to licence conditions to better manage sea lice.

   Pro:
   -Legal authority to change licence conditions;

-Support by the public;
-The possibility of litigation by ENGOs or First Nations reacting to high sea lice numbers may be reduced;

Con:
-It is difficult and will likely take several years to have changes made to the FA. Changes to the PAR may be easier to implement but will still take a significant length of time.

4. Direct order from Minister of Fisheries and Oceans for conservation reasons

Pro:

Con:

5. Licence conditions amended for farms located in the Discovery Islands as only one year licences are issued in this area. Due to complexity of issue target changes to licence for the December 2018 renewal;

Pro: Long term strategy to amend all licences using a phased approach

Con: Changing only licence conditions for farms within the Discovery Islands may trigger a judicial review as ENGOs or First Nations may have the position that all farms need the same regulatory requirements

As noted above there are several options to consider with regard to increasing the Department's ability to manage sea lice. Two options relate to the inclusion of specific time frames/actions whereby absolute sea lice numbers are significantly reduced in a short period of time if thresholds are exceeded during the March 1 to June 30 time period. One relates to the use of harvesting to reduce the absolute sea lice inventory and the other relates to the addition of a licence condition that requires sea lice number to be reduced to below the three motile *Lep* threshold if a treatment option other than harvesting is chosen.

With regard to harvesting several factors need to be considered in developing a condition that will ensure a significant reduction in the risk to migrating smolts. These would include the size of the farm (number of fish on site), year class, degree of infestation (sea lice count), number of fish harvested (% of stock on site), maximum length of time of the harvest and sea lice resistance to SLICE or other chemical treatments. A matrix could be built to reflect these factors. For example the degree of infestation, an average of 10 sea lice vs an average of 50 sea lice could be managed differently as could a farm with a maximum combined biomass of 2500t vs a farm with 3500t. The latter farm will have a much greater absolute sea lice number. First year fish often carry less sea lice as they are smaller. These factors should drive the degree of harvesting and

possibly the maximum length of time for harvesting to be completed. It is important to note that a licence holder has 15 days to implement an action plan if above the threshold and considering a minimum two week period for harvesting to occur will results in high sea lice counts for an entire month.

At present there is no licence condition that requires the licence holder to reduce the average sea lice numbers below the threshold of three motile *Lep* if other treatments options are chosen. This requirement would align with other performance management measures in the marine finfish licence such as that for exceeding benthic thresholds. This would also reduce the absolute sea lice numbers to a level that aligns with the three motile *Lep* threshold.

In order to reduce the risk of impacting wild salmon smolts another option would be to move the March 1 implementation date for enhanced monitoring outlined in condition 6.4 back to February 1 or even January 1. The increased sampling frequency would give the licence holder more time to react to and reduce high sea lice numbers prior to the smolt outmigration window starting in early March.

A final option for review and potential change is the sea lice sampling and monitoring program associated with the July 1 to February 28 (see discussion above to push back this date) period. A fundamental question is does a sea lice load of 50 motile *Lep* in October have a different level of risk than if it occurred in January or during the March 1 – June 30 period? What are these risks and how would they be managed? Is one option to hold off on the use of any treatment, but especially SLICE, until early in the calendar year in order to ensure the threshold of three motile *Lep* is met by March 1?

WHAT'S THE CHANCE OF LITIGATION IF DFO DOES NOT DO SOMETHING?

IS THIS A COMMON PROBLEM OR JUST A ONE-OFF?

Other questions not directly related to changing licence conditions:

Evidence of resistance? Change treatment approach asap. Provincial role in treatment options. Are alternate treatment options best used during certain times of the year to reduce risk? What about during the smolt migration?

Support of alternate treatment methods such as cleaner fish and high pressure washing?

Different treatments may have different requirements in their use.

What happens if a company goes bankrupt and can't get rid of the fish?

RISK FACTORS TO CONSIDER IN CALCULATING SEVERITY OF POTENTIAL IMPACT TO WILD FISH

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