

From: Gary Nowlan
Sent: March 7, 2019 8:27 PM
To: ea@novascotia.ca
Subject: Replacement Effluent Treatment Facility Project

As a citizen in Pictou I am writing to express my concern with the idea of pumping treated effluent into the Northumberland Strait.

For the last 14 years I have been the designer and director of the Pictou Lobster Stock Enhancement Research Project run by the Northumberland Fisheries Museum. The hatchery was commissioned in 2004 primarily to attempt to repopulate the lobster stock in LFA 26a located outside Pictou harbour where the stock level had severely dropped. This drop coincided with the years that the pulp mill effluent pipe in Pictou Harbour was leaking effluent.

Following the break in the effluent pipe from the mill in 2014 I conducted an experiment to see the effect on lobster larvae. (see attache file: 2014 Larvae experiment.doc) As you will see, the conclusion at the end of the experiment was 100% stagnation in growth. This would lead to death on a stage I larvae.

In January 2018 I read comments in favor of the Northern Pulp plan from a Micheal van den Heaver. As he was shown as an expert, I sent him my experiment data and received the attached file.(letter from Michael van den Heuvel). As you will read he had no knowledge with lobster larvae and his final comment is: **I would encourage pressing the mill for increased testing on this basis. This should be done with graded concentrations of effluent, along with modeling of the effluent plume to truly assess the risk.**

Following this I sent my concern to Northern pulp and Dillon Consultants. In April I received the attached reply (see attached letter from Dillon) where I was lead to believe this would be checked out.

Thank you for submitting your lobster larvae experiment. As a part of the Environmental Assessment process, industry experts have been hired at each stage of the process, with the understanding that Northern Pulp wants to find a path forward that protects the environment while also allowing for the mill to continue operations.

I have not been able to find where any further studies have been done or that the effect of effluent of lobster larvae has been taken into consideration. As you can see from my experiment, our pulp mill effluent posses a sufficient risk to lobsters by the high morality of larvae. This need further study and must be taken into account prior to any approval of the project.

Thank you for the opportunity to express my concerns.

Gary D. Nowlan

LARVAE EXPERIMENT 2014, Gary Nowlan, director LSERP

- Experiment:** Effects of effluent collected from tidal pond on Pictou Landing shoreline following the break in the effluent pipe from Northern Pulp.
- Date:** Summer 2014
- Location:** Pictou Lobster Hatchery
- Conducted by:** Gary Nowlan, director, and a summer student,
- Method:** Two conical 25-liter tanks were filled with 21 liters of hatchery sea water from Pictou harbour.
- Each tank 1 and 2 were aeriated to maintain oxygen levels.
- Water temperature of each tank maintained between 19 and 21 C
- 250 ml of collected effluent was added to tank 1. It is noted that effluent was collected in shoreline pond following one tide change, concentration was not tested.
- 20 lobster larvae, 3 to 8 hours old stage I, were added to each tank.
- Small amount of live brine shrimp added each day for nutrient.
- Observations:** Day 1- to 3, all larvae in both tanks swimming and look well.
- Day 4- tanks 2 larvae showing signs of molting. Tank 1- no change.
- Day 5- tank 2- most larvae at stage II but numbers at 18. Tank 1 uneaten brine shrimp indicated larvae not eating
- Day 7- tank 2 numbers down to 15
- Day 14- Tank 2 numbers down to 10 mostly at what appeared to be stage III.
- Day 21- Tank 2 numbers at 4 stage IV, Tank 1 still had 20 larvae at stage I.
- Experiment was stopped after 28 days after no change in either tank.
- Conclusions:** Diluted effluent did not kill lobster larvae in 4 weeks, however they did not develop but stagnated at the stage I with zero growth which would lead to 100% mortality.

From: Michael Van Den Heuvel
Sent: January 21, 2018 12:09 AM
To: Gary
Subject: Re: Pictou pulp mill

Thank you for sharing this with me, I find the results very interesting. Little or no research has been done with lobster and pulp mill effluent. We are doing some research with some locally used pesticides and lobster in collaboration with homarus and even with common pesticides, this is the first American lobster data available. They are not the easiest critters to work with.

Please understand that I based my comments on what we know from 30 years of pulp and paper research, assuming the mill would meet the effluent quality standards that are possible with advanced biological treatment, and that the dilution of the effluent in an area with the highest tidal exchange in the strait is likely to be great. I qualified to the reporter that I felt it was valid to have concerns, and if those concerns or great, which they are, most testing and information should be required before going ahead. But one cannot control what parts reporters put in print. I don't find all of the information provided by the mill to be sufficient myself. But on the balance, the possibility of a very limited area of impact is possible or even probably.

The science out there is not perfect, you can't test every organism with every effluent. No two pulp mill effluents are the same. I simply made comments on best available evidence based on pulp mill around the world. There are still a few pulp mill effluents out there that have significant effects, while some do not (see attached paper) however we can limit those effects with proper treatment. That by the way is not just a matter of having a fancy treatment system, it involves recycling all liquors in your pulping process, avoiding spills in the mill that can disturb a treatment system for a month, and operating that treatment system properly. The more complicated the treatment system, the harder it is to operate. This involves an environmental ethic and culture within the mill. Judging by some of the politics going on, that is perhaps not good.

While your experiments would not meet the rigor of scientific peer review, I do believe that they present interesting and valid preliminary evidence. I would encourage pressing the mill for increased testing on this basis. This should be done with graded concentrations of effluent, along with modeling of the effluent plume to truly assess the risk. I would be happy to participate in such with in collaboration with a fisheries organization such as Homarus.

Regards

April 3, 2018

To: Mr. Gary Nowlan

***Northern Pulp Nova Scotia, Effluent Treatment Facility Replacement
Project Update***

Dear Mr. Nowlan:

Thank you for engaging with the Environmental Assessment (EA) study for Northern Pulp's replacement Effluent Treatment Facility. The feedback we receive during the EA study process is important and will continue to guide the environmental planning for the project.

***Responses to Your Comment
Lobster Larvae Experiment***

Thank you for submitting your lobster larvae experiment. As a part of the Environmental Assessment process, industry experts have been hired at each stage of the process, with the understanding that Northern Pulp wants to find a path forward that protects the environment while also allowing for the mill to continue operations. Expertise has been sought in engineering and environmental sciences. The findings you have provided have been passed on to the team for their consideration. Please note that the experiment as described was conducted on untreated effluent from a pond that was not tested for concentration of parameters. This is not a direct comparison to the impacts that treated effluent will have on lobster larvae. Under Pulp and Paper Effluent Regulations, effluent must be treated before discharge to ensure fish are not harmed. In the future, the effluent pipe from Northern Pulp will carry treated effluent whereas now the pipeline carries untreated effluent. We do appreciate you sharing your findings, and ask that you share any other information you believe will be relevant to the EA.

Sharing Information

In Spring 2018 we will return to the community with another series of Open House sessions which will provide answers to questions raised during the initial phase of engagement and present the recommended environmental plans and seek feedback. Indigenous community and stakeholder engagement will also be ongoing through the next phase of the project.

If you have further questions or comments, please contact the project team at nps.effluenttreatmentfacility@dillon.ca, 1-877-635-8553 x 5050 and/or visit the