

MEMORANDUM FOR THE MINISTER

**NEW RESEARCH RESULTS ON THE
INTERACTIONS BETWEEN SEA LICE AND JUVENILE PINK SALMON**

(Information Only)

SUMMARY

- A new study from Fisheries and Oceans Canada (DFO) linking sea lice to juvenile wild salmon mortality is expected to be released in April 2008.
- This study, combined with Environmental Non Government Organization (ENGO) studies could significantly increase public attention and concern on the issue of how sea lice from salmon farms affect wild salmon in BC.
- This is the first DFO study that confirms ENGO claims of mortality of individual juvenile pink salmon from sea lice infections. The results of this study are laboratory based and will require analysis of field data to understand their potential applicability to the natural environment. (good change, BR)
- DFO will; develop a communications plan to manage the possible media and public interest, continue to closely monitor the situation and provide scientific advice to resource managers.

Background:

- Sea lice are a naturally occurring parasite found in wild populations of fish.
- Since 2001 public concern has been raised that commercial salmon aquaculture farms are the major source of these sea lice, causing increased levels of infection of wild juvenile salmon by sea lice in the Broughton Archipelago (BA) area of the B.C. coast

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- ENGO's have suggested to the public that sea lice from salmon aquaculture farms cause an increase in the severity of infections in B.C.'s wild pink salmon resulting in a decrease in wild salmon populations.
- A recent report modeled the outcome of lice – pink salmon interactions was published by ENGO - linked researchers in the high profile journal *Science*. This study predicted that, if infection continues, sea lice from farms will cause the extinction of some pink salmon populations in 4 generations (8 years) due to increased mortality in the juvenile salmon.
- Further, a separate paper by environmental activist Ms. Alexandra Morton linking sea lice infections to declines in Fraser river sockeye populations is expected to be published in early 2008.
- Since 2003, the Department has conducted extensive field and laboratory research programs to study sea lice, its potential origins, and the health of wild salmon populations in the area and have not found concrete evidence to support ENGO claims.
- To this date DFO has not been able to demonstrate a link between the levels of sea lice on the farms and the number of wild adult wild pink salmon returning to the Broughton Archipelago. Large fluctuations in abundance are typical amongst pink salmon populations and there are many potential sources of at-sea mortality.
- However, in the next few months a new study by a DFO scientist (summarised in an earlier briefing note) is expected to be published indicating that, in the laboratory, very small pink (0.3 gm.) salmon are subject to an increased mortality rate if exposed to high levels of sea lice.

Analysis

- This is the first Departmental confirmation of lice- induced mortality on wild salmon and will likely be used by ENGOs to support their claims that salmon aquaculture farms cause an increase in wild salmon mortality rates through the spread of sea lice.
- However, it is important to note that this DFO laboratory study does not provide evidence that sea lice from salmon aquaculture farms infect wild salmon at high enough levels to decrease abundance of wild pink salmon in the natural environment. [this bullet is misleading and should be deleted, BR this type of statement could certainly get the DM into a heated debate. In the absence of

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treatment open-net pen salmon farms are a very likely source of the lice nauplii, and we now have evidence that sea lice infection can kill individual fishes. The difficult link is between the effect on individual fish and whether the level of mortality is high enough to reduce the return of adult pink salmon (i.e., the population level effect). The natural mortality of pink salmon in the absence of any salmon farm effect is known to be large (55-77% in the original study) and due to many factors. The challenge in the sea lice debate is how to determine a population level effect of sea lice from salmon farms in a complex and dynamic environmental such as the Broughton Archipelago.]]

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- Regardless, the release of the DFO study on lice induced mortality could precipitate a significant media event and could be seen by ENGOs and the public as confirmation that aquaculture is negatively affecting the wild salmon populations.

Next Steps

- DFO-Science will continue its program of pink salmon monitoring and sea lice research in 2008. These studies are aimed at understanding the interactions between sea lice and salmon farms.
- To complete these studies of interactions, it is essential for Science Branch to be provided data from the salmon farms. To date, industry has not cooperated. After five years of research, DFO must determine means to acquire this data in order to publish this research and provide informed advice.
- Concurrently, the Department will examine data collected over the past five years to determine where and when small pink salmon are prevalent and how those locations relate to salmon farm sites.
- The department will develop a communications plan that will focus on presenting and explaining these new scientific findings to the public, and ensuring the public that DFO is continuing to monitor the sea lice situation.
- Science will continue to work with and support Resource managers with the provision of the latest scientific advice from all sources

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Michelle d'Auray

Edward Black / Jay Parsons / Christine Stoneman / Sylvain Paradis / Wendy Watson-
Wright / db

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MECTS # 2008-502-00021
FILE / FICHER #

To: Michelle d'Auray

Date: January 29, 2008

Object:

MANAGEMENT IMPLICATIONS OF NEW SEA LICE RESEARCH RESULTS

From: Sylvain Paradis, Director General, Ecosystem Science Directorate

Via: Wendy Watson-Wright, Assistant Deputy Minister, Science

Your Signature
Votre signature

Information

For Comments
Observations

Material for the Minister
Documents pour le Ministre

Remarks:
Remarques:

Laura Richards, Regional Director Science - Approved

Drafting Officer: Edward Black (613 990-0272)/Christine Stoneman/Sylvain Paradis

X: Ecosystem Science/1. Minister\Memo-to-Min \2008\2008-502-00021 Sea Lice Management Action Memo Jan. 28, 2008

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