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Marine Harvest Comments on New Study by Krkosek & Morton

In the December 2007 issue of *Science*, two long-time critics of salmon aquaculture in BC published a study that purports to show how salmon farms in the Broughton Archipelago are leading to the extinction of some wild salmon stocks in the area.

Two key oversights of the study are that it fails to admit the persistent contribution of sea lice from wild sources and it ignores the effects of significant actions that all salmon farms take to reduce the potential for farm fish to contribute sea lice to wild fish during the spring migration period. These actions are successful in controlling and eliminating sea lice and, in the case of Marine Harvest, have been readily available to all researchers on our website:

http://www.marineharvestcanada.com/farming_fish_health_sea_lice.html

While we invite constructive criticism and welcome new research on the interaction between farmed and wild fish, this latest paper from Martin Krkosek and Alexandra Morton is so extreme and off-base in its conclusions that we are compelled to write you, as someone with an interest in aquaculture issues, to point out some of its serious problems. In short, other scientists who study the same matters are concerned that these authors are too selective in their choice of data, use certain mathematical models inappropriately, ignore or improperly cite important published literature that disagrees with their hypothesis and reach conclusions which directly contradict today's realities.

Some specific problems with the study and its methodology are:

- Excluding data from the Glendale River reduces the pink salmon spawner total by up to 80%, yet resultant smolts swim out of the Broughton in the spring and are mixed in with and genetically the same as many of the individual river stocks listed in table 1;
- The fact that many of the rivers with low returns in the Broughton have had stream damage due to the effects of landslides and decades of human activity is not brought out in the study;
- It does not acknowledge the findings of recent sea lice mortality research on pink salmon with contrasting results far less than the 80% figure cited;
- Literature is cited in support of the author's "fallow" hypothesis when in fact the quoted research disagrees with this contention;
- Assertion that the sea lice "problem" began in 2001 when in fact sea lice have always been present; it was the study and monitoring of sea lice on wild smolts which began at that time.

Contrary to this report, data gathered by the Department of Fisheries and Oceans and available on their website shows that **overall pink returns to the Broughton streams are similar to historic averages and have been increasing since 2003**. At the same time, the numbers of sea lice on wild fish caught by researchers in the Broughton have declined in each of the last 3 years. In short, the situation for pink salmon in the Broughton is improving.

A hallmark of science is the willingness of scientists to look at the full range of evidence and, if the evidence merits it, change their conclusions about a scientific question. Mr. Krkosek and Ms. Morton are strong opponents of salmon aquaculture—fair enough. But they need to draw a clear distinction between their advocacy efforts and their role as objective scientific researchers.

A detailed critique of the study's shortcomings, authored by a group of scientists directly involved in the study of sea lice ecology, is being submitted to *Science*. This document will also be forwarded to your attention when it becomes available.

Please call me at 250-850-3276, extension 7258, or e-mail me at Clare.Backman@marineharvest.com if you have any questions or comments on this letter or the study.

Sincerely,



Clare Backman
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Marine Harvest Canada