

FISH FARMS

Sea lice making salmon extinct, study says


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VANCOUVER -- A new research paper based on more than 40 years of fisheries data collected on Canada's West Coast has concluded that sea-lice infestations caused by salmon farms can drive nearby wild stocks to extinction.

Leading fisheries scientists are hailing the study as a definitive work that ends the debate about the dangers of fish farming - but the aquaculture industry and the federal Department of Fisheries and Oceans reject it, questioning the methods used and the conclusions reached.

The study, led by Martin Krkosek of the University of Alberta and published in the current edition of the prestigious journal *Science*, focused on the Broughton Archipelago, where most of British Columbia's 100 active salmon farms are clustered in sheltered inlets fed by wild salmon rivers.

The researchers found 80 per cent of the pink salmon returning yearly to the area are being killed by sea lice, which drift out of the farms and attach to wild, juvenile salmon.

Print Edition - Section Front



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"If nothing changes we are going to lose these fish," Mr. Krkosek said of the wild pink salmon stocks in the Broughton. "The population growth rate for the pink salmon in the Broughton during the infestations has been significantly negative. ... extinction probability is 100 per cent and the only question is how long that's going to take."

He estimated the stocks will be locally extinct within four years.

The researchers say the findings are applicable to any area in the world where young salmon have to swim past net pens containing densely packed schools of farmed fish that are shedding sea lice.

"It's the first time that we've had enough detailed data to actually measure the effect of sea lice on wild salmon populations," said Mr. Krkosek, who looked at DFO records dating from 1970 for 71 salmon rivers.

"What we found is that before the sea-lice infestations began in the Broughton, the pink-salmon populations there were just fine. They had positive population growth rates. ... But when the sea-lice infestations began, and they have been recurrent since then, we measured a sharp decline in the population growth rate."

Mr. Krkosek said wild-salmon populations in an area just north of the Broughton, where there are no salmon farms near spawning rivers, have continued to thrive.

Alexandra Morton, one of the co-authors, said the loss of pink-salmon stocks will send an ecological and economic shock wave down the coast.

"I like to call them the bloodstream of the coast," she said of pink salmon, which provide feed for eagles, grizzly bears, killer whales and other salmon species, such as chinook, on which the sports-fishing industry is based.

Ms. Morton said the study proves the link between farms, sea lice and wild-salmon declines, and she called on government and industry to respond.

"It's really simple. Just separate the little guys from the big guys. This is what nature does. Feed lots normally on land are under very closed, quarantined conditions and the fish farms have to get into that program as well."

Clare Bachman, environmental compliance manager for Marine Harvest seafood company and a spokesman for the B.C. Salmon Farmers Association, said he was skeptical of the study.

"Our immediate response to this article is that it has serious flaws in the way it was put together," he said, noting the researchers left out data from the Glendale River, where artificial spawning channels have produced a strong run of wild fish.

"Also, it doesn't reflect some of the other changes going on [in the industry]," he said, in reference to chemicals and other methods used to control sea-lice outbreaks on farms.

DFO also had reservations about the study.

"I think the paper simply overstates the risk to pink salmon in the Broughton ... and it simply isn't consistent with the observations of recent years in the Broughton," said Brian Riddell, a top salmon scientist for DFO.

"I don't think that it's completely flawed ... but I do not believe that the [peer] review process did any credit to this paper," he said.

But Daniel Pauly, one of the world's leading fisheries researchers and director of the University of B.C. Fisheries Centre, said the study is undeniable.

"Science actually writes ... the first or the last paper about a topic. ... It's something completely new or something that is not new but settles the issue. ... This is definitive - and the baton is passed to policy [makers]."

Dr. Pauly said it is up to government to act on the findings and bring in regulations to control the impact of fish farming on wild salmon.

"The reluctance of the provincial government and of the DFO to pick that up as a policy item in good faith is actually the real story, the real scandal," Dr. Pauly said.

Ray Hilborn, a leading fisheries researcher with the University of Washington, said the paper "shows there is a real danger to wild populations from the impact of farms."

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Phillip Crawley, Publisher