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Large quantities of sea lice on emigrating post smolt in the Sognefjord

Surveys of emigrating post smolt of salmon, undertaken by The Institute of Marine Research, Bergen, Norway, show an alarmingly high abundance of sea lice in the Sognefjord, while no lice were found in material from Namsfjord.

Average number per fish from the Sognefjord shows 81 lice of the stages copepodite and chalimus. This large number of sea lice on emigrating post smolt has most probably already caused the death of most of this year's smolts from the Sognefjord. Estimating that 15 or more lice per fish constitute a lethal level, this gives an estimated mortality of 95 %. The data from the Sognefjord should be considered a minimum estimate for lice infection.

On the other hand scientists did not register lice on the material caught in Namsfjord and adjacent coastal areas.

This is the principal conclusion of four years of investigations into the abundance of sea lice upon emigrating post smolts in western Norway and north to Namdal, executed by the Institute of Marine Research. This year's survey, undertaken by the research vessels "Fangst" and "Michael Sars" by the use of special equipment developed by IMR to catch live salmon offshore.

In addition to the fjord investigations, the emigration from the rivers Vosso and Aurland were surveyed in May-June with traps for catching live post smolt. Surveillance of the emigration dynamics generates a better planning and control of the fjord trawling, as well as a simplification of the interpretation of the collected lice data. The investigations in the river Vosso have been executed in cooperation with the University of Bergen, and those in the Aurland river were undertaken by the consultancy company Rådgivende Biologer and Oslo Energy Company.

Little fresh water in the Fjord

This year's results show a considerably larger abundance of sea lice compared to last year. Last year, there was no observation of lice on fish from Nordfjord. The main reason for this is the totally different hydrographic conditions this year. A winter with abundant snowfalls and a mild spring last year produced large quantities of fresh water in the surface layers of the fjords. This year, however, the sparse snowfalls and the cold spring reduced the fresh water in the surface layers. These conditions favour the sea lice. A higher salinity at the surface induces the lice to penetrate the surface layers further inside the fjords, and consequently to infect the salmon swimming close to the surface. The data show that sea lice of more mature stages upon salmon were now found deeper inside the Sognefjord compared to previous years. This confirms that this year's infection started closer to the river estuaries.

Even if this year's hydrographic situation is peculiar, this year's data show that the abundance of lice in the Sognefjord is too large. A decrease of the wild salmon stocks should be expected to continue if the sea lice situation is not brought under control. A cessation of the fisheries of immigrating salmon will not be a sufficient measure. The long term objective should be to implement measures to reduce the concentration of sea lice in the fjords and the coastal current. Protective treatment of live smolt being rereleased, and towing of smolt kept in floating tanks out of the fjords, to release them in the coastal current could be possible short term measures.

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