

# Impact of salmon farms on wild salmon uncovered

30/03/2005 - **A new study suggests that the transfer of parasitic sea lice from salmon farms to wild salmon populations is much larger and more extensive than previously believed.**

The findings, published in the 30 March edition of the scientific journal *Proceedings of the Royal Society B* - a publication of the UK's national academy of science - could represent an important milestone in an ongoing contentious debate.

They suggest there is a grave need to reconsider the premise of industrial scale fish farming in wild salmon habits. *"There's a double bottom line here. The full ecological costs of industrial scale salmon farming must be quantified as well as the economic ones,"* said John Volpe, coauthor from the University of Victoria. *"For the migratory runs we studied, there may be very little time left."*

The survey come at a difficult time for many salmon farmers. In Scotland for example, there are fears that the industry is being overtaken by highly automated Norwegian producers, which has helped to turn a food that was once considered a rare delicacy into an every day product.

The suggestion that industrial-scale farming could harm wild salmon stocks could have further implications for a luxury product such as Scottish wild salmon.

The study combined new field techniques that allowed comprehensive, individual observations of over 5,500 young wild pink and chum salmon over 60 km of migration route and state of the art models of disease transfer.

*"Our research shows that the impact of a single farm is far reaching,"* said lead author Marty Krkosek. *"Sea lice production from the farm we studied was four orders of magnitude - 30,000 times - higher than natural."*

*"These lice then spread out around the farm. Infection of wild juvenile salmon was 73 times higher than ambient levels near the farm and exceeded ambient levels for 30 kilometres of the wild migration route."*

This increase in sea lice abundance is likely to be damaging for already dwindling wild salmon populations in British Columbia, where the study took place.

In Europe, transfer of parasites is generally accepted as a significant threat to adjacent wild populations - although European studies have not measured the direct transfer of sea lice from farms to wild salmon. However, a bitter debate continues in British Columbia and the Pacific Northwest as to whether salmon farms are contributing to sea lice infections of wild salmon at all.

*"Parasites are a key negative side effect of fish farms on the local fish stocks,"* said Andrew Dobson, an epidemiologist from Princeton University who researches infectious diseases in wildlife. *"We're seeing similar effects in Scotland, Norway, and Ireland; in each area parasite amplification on fish farms seems to increase disease levels in the local fish community."*

*"However previous studies have not shown nor quantified the direct transmission. This study captures the chain of events."*

Sea lice can lower the fitness of salmon - and in some cases be lethal - as they create open lesions on the surface of the fish that compromises a fish's ability to maintain its salt-water balance. When infection rates are high enough, the parasites feed on the fish at rates greater than the fish can feed itself, literally eating the fish alive. Adult salmon can survive sea lice infection, but young salmon are much more vulnerable due to their small size.