

Devastating impact on Wild Salmon populations from Sea Lice

Inland Fisheries Ireland has collaborated in an international study to examine the impact of sea lice on the marine survival of Atlantic salmon. In a newly published report, results reveal that that on average 39% of salmon mortalities were attributable to sea lice which impacts wild salmon numbers and therefore wild salmon fisheries.



Damage caused by sea lice

In previously published studies, groups of salmon smolts were treated to protect them against sea lice infestation and other groups were untreated and both groups released to sea into 10 areas of Ireland and Norway. A proportion of these released fish were recaptured as adult salmon one or more years later. Analysis of the results of all previously published studies together provide experimental evidence from a large marine ecosystem that sea lice can have large impacts on salmon recruitment, fisheries, and conservation. The sea lice were likely acquired during early marine migration in areas with salmon farming, which elevate local abundances of sea lice. The research, published in Proceedings of the Royal Society B, involved experts from the the Scottish Oceans Institute at the University of St Andrews, The Department of Zoology at the University of Otago in New Zealand, the Atlantic Veterinary College at the University of Prince Edward Island in Canada, the Institute of Marine Research in Norway, the Norwegian Institute for Nature Research and Inland Fisheries Ireland.

Results indicate that parasite-associated mortality may cause the closure of some fisheries when conservation targets of return adult abundances are not being met. However, the implications of these results may be most serious for small populations in small river systems. The concern therefore is not only for a 39% loss in salmon abundance, but also the loss of genetic variability.



Sea lice infestation

In these studies, high marine mortality naturally affects both treated and untreated salmon groups. However, analyses in this study allowed for the high natural mortality to be accounted for and isolated the estimated loss of salmon recruitment due to parasitism, revealing a large effect of parasites. Precisely because natural mortality rates are high, even a proportionally small additive mortality from parasites can [amount](#) to a large loss in adult salmon recruitment.

The finding that sea lice are responsible for 39 per cent of the mortalities amongst salmon in the Northeast Atlantic Ocean is significant in the context of declining salmon stocks across Europe. The salmon aquaculture industry in Ireland are required to maintain sea lice levels below designated Protocol levels to protect wild fish from increased sea lice infestation. The treatment against sea lice had a significant positive effect on survival.

Minister of State with responsibility for Natural Resources Fergus O Dowd, TD, welcomed the report stating “from the results of this detailed study, it is crucial that sea lice levels are maintained below these protocol levels, particularly in spring when wild salmon smolts are migrating to sea to avoid increased marine mortality. I have consistently given my support for the development of aquaculture, and its reported potential for job creation, which complies with our obligations under the relevant EU environmental legislation and in particular the EU Habitats Directive. The results from the latest comprehensive study augment our knowledge in the context of proposals for aquaculture development. I am equally conscious of the imperative to develop Ireland’s angling sector, worth an estimated €150m annually to the national [economy](#) and to ensure a cohesive approach to development across Departments and State Agencies involved in both sectors”.

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Media enquiries

Suzanne Campion

Head of Business Development,

Inland Fisheries Ireland,

Anglesea Street, Clonmel, Co. Tipperary.

Tel: 052 6180055 **Fax:** 052 6123971

Email: suzanne.campion@fisheriesireland.ie **Website:** www.fisheriesireland.ie

Notes to the Editor

The full report can be downloaded from <http://rspb.royalsocietypublishing.org/content/early/2012/11/01/rspb.2012.2359.full>