CNL(23)75

Update on the State of Knowledge Paper of the effect of salmon lice and escaped farmed salmon on wild Atlantic salmon

Presentation at the 2023 NASCO Annual Meting

Dr Paddy Gargan – Project Co-ordinator

The Agreed Approach to the review

- After considerable discussion, the Expert Group agreed that the approach that should be taken for the genetic introgression work and the sea lice work was quite different and two sub-groups were formed.
- Genetic introgression was reviewed in 2017 and there is also a lot more definitive information on the impacts of escaped farmed salmon on wild salmon and little or no conflict in the literature on the impact of escapes.
- For the sea lice work, the Group felt that a systematic review and critical appraisal of the literature will be required and the approach and methodology that will be taken will be different to the escapes work.
- Therefore it is proposed to produce one paper on the genetic introgression work and one paper on the impacts of sea lice.
- The possibility of combining the findings of both papers into a third policy paper with management implications has also been discussed.

Both the sea lice and genetic introgression sub-groups invited additional scientists to participate in the State of Knowledge Paper

- Sea Lice Sub-group
- Simon Jones – DFO – Canada
- Knut WIik Vollset - Norce - Norway
- Damien Brady – Univ of Maine USA
- Steven Cooke – Canada
- Marie Lie Larsen – Norway
- Robert Lennox - Canada
- Sandy Murray - Marine Scotland
- Sussie Dalvin – IMR, Norway,
- Sam Shephard – Inland Fisheries Ireland,
- Frank Nilsen – University of Bergin Norway.

- Genetic Introgression Sub-group
- Sten Karlsson – NINA _ Norway
- Eva Thorstad – NINA – Norway
- Ian Bradbury – DFO – Canada
- Geir Bolstad – NINA - Norway
- John Gilby – Marine Scotland
- Phil McGinnity – UCC - Ireland
- Brendan Wringe – DFO - Canada
- Leó Gudmundsson - Iceland

Progress from the Genetic Introgression group since the State of Knowledge Workshop in February 2023

- The main focus of the genetic introgression sub-group now is to present the state of knowledge on genetic introgression in the eastern and western side of the North Atlantic, including the British Isles (Scotland and Ireland), Scandinavia (Norway, Sweden), Iceland, North America (Canada, USA).

- The group are in the process of collecting data to create a map of the entire North Atlantic showing levels of genetic introgression and a map showing production of farmed Atlantic salmon.

- This collection of data will be completely new in that it will present levels of genetic introgression across the entire distribution range of Atlantic salmon.

- The group will also give an update on the state of knowledge of the consequences of genetic introgression on natural wild salmon populations

- The intention is to have a manuscript draft by the end of 2023.

Progress from the Sea Lice Group since the State of Knowledge Workshop in February 2023

- The sea lice group have devised primary questions regarding:
- a) *To what extent does sea lice from aquaculture contribute to the burden of sea lice on migrating salmon post smolts?*
- b) *How does the (various) level of sea lice infestation impact the performance of wild salmon post smolts?*
- c) *Is there a population reduction in wild adult salmon from salmon lice? If so, how much?*
- A critical appraisal tool is being developed to determine the ideal studies designs to investigate these question with respect to reducing their potential biases in the methodology.

Progress from the Sea Lice Group since the State of Knowledge Workshop in February 2023

- Literature searches have been checked with libraries at University of Bergen and NINA.
- Searches have been performed in three bibliographic databases resulting in 1845 unique publications, all of which have been screened at title and abstract.
- A call for grey literature was developed and is in circulation and these will also be screened
- Work is continuing on the systematic review and critical appraisal of the impact of sea lice on wild Atlantic salmon with a view to having a quantitative analysis and initial draft paper by the end of the year