Recent advances in salmon louse research

F. Nilsen

Sea Lice Research Centre, Department of Biological Sciences, University of Bergen, Thormølensgt 55, 5008 Bergen, Norway

Abstract
The salmon louse and other sea lice are currently one of the main reasons for economical loss in farming of Atlantic salmon. Due to emerging resistance to the currently available medicines, cost of treatment has increased significantly. In Norway, the authorities have set low and strict limits for the average number of lice/farmed fish in order to reduce the environmental impact inflicted by lice infections (i.e. reduce probability to infect wild salmonids). New mechanical treatment methods have been developed but they typically have negative impacts on fish welfare. More research is necessary to ensure a sustainable lice control strategy. The present paper is a summary and supplement to the key note presentation given at the EAFP-meeting in Belfast Northern Ireland, September 2017.

Background

The salmon louse (*Lepeophtheirus salmonis* Krøyer, 1797) is a long-known parasite and there are written records back to the 1500s on wild returning Atlantic salmon carrying salmon lice when it was regarded as a sign of quality when salmon were caught with lice in rivers. The salmon louse has been present on farmed salmon since salmon farming started but lice received little attention at the beginning and were not regarded as a significant issue. From the late 1970s and onwards, salmon farmers de-loused the fish when the lice levels were high and causing damage to the farmed fish. In the early 1990s reports on highly infected sea trout emerged in Norway and it was observed that heavily infected sea trout prematurely returned to freshwater. Pre-mature return of sea trout was a feature in areas with high densities of farms. Later in the late 1990s, high infections were also found on migrating wild post smolts in some Norwegian fjords. The areas with highest infections on wild salmonids were also the areas with highest density of farmed Atlantic salmon indicating that the lice larvae may originate from farmed fish. This connection resulted in changes in lice management and lice limits on farmed fish were introduced (i.e. average number of lice on farmed fish when treatment was required). The de-lousing limit has changed over time (from five females/fish to 0.5 females/fish and even lower during spring) as the number of farmed fish has increased. Today salmon louse management on farmed fish in Norway is set up in a way to minimise impact on wild salmonids and the treatment trigger is set to a level where there is no damage to the farmed fish. There is a large effort with high costs from the farming industry to keep salmon lice levels low on farmed salmonids in Norway.

* Corresponding author's e-mail: frank.nilsen@uib.no