The effect of different temperatures on the abundance of sea lice (*Lepeophtheirus salmonis*) at a commersial salon farm

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Context

The Norwegian aquaculture industry has developed into a booming industry over the course of the past decades. Biological advancements has lead to the ability of producing salmon and trout all year round.

This however, results in there being constant amounts of hosts for the parasite, salmon louse (*Leopeptheirus salmonis*). This creates vast breeding grounds for the parasite, and poses a threat to the wild salmon and trout populations.

This study aims to compare the abundance of salmon lice at a salmon farming facility (Bakjestranda) located in Froysjoen, and analyze the abundance in correlation with sea temperature.

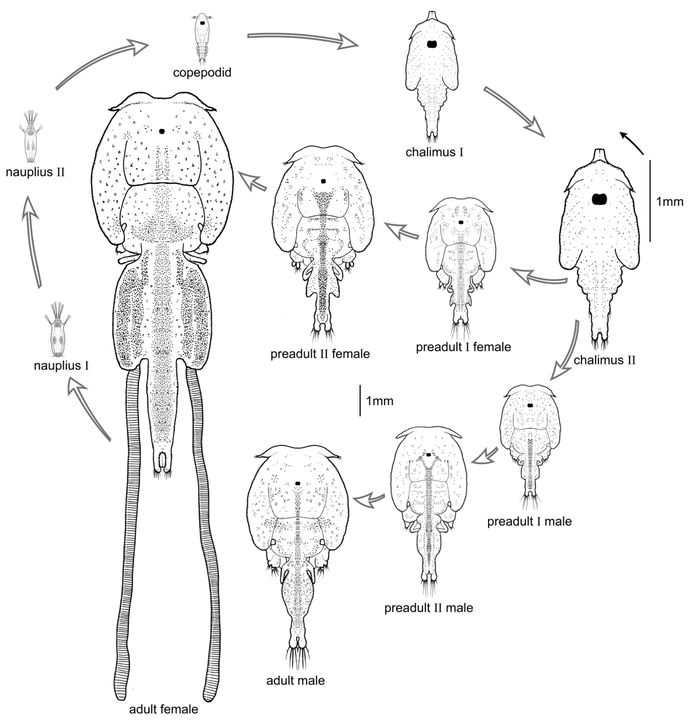


Figure 1: The visual depiction of the eight life stages of the life cycle of *Lepeophtheirus salmonis*, the salmon louse.
Sea Lice Research Centre, 2020, "SLRC - Life cycle of the salmon louse (Lepeophtheirus salmonis)", https://doi.org/10.18710/GQTYYL, DataverseNO, V1

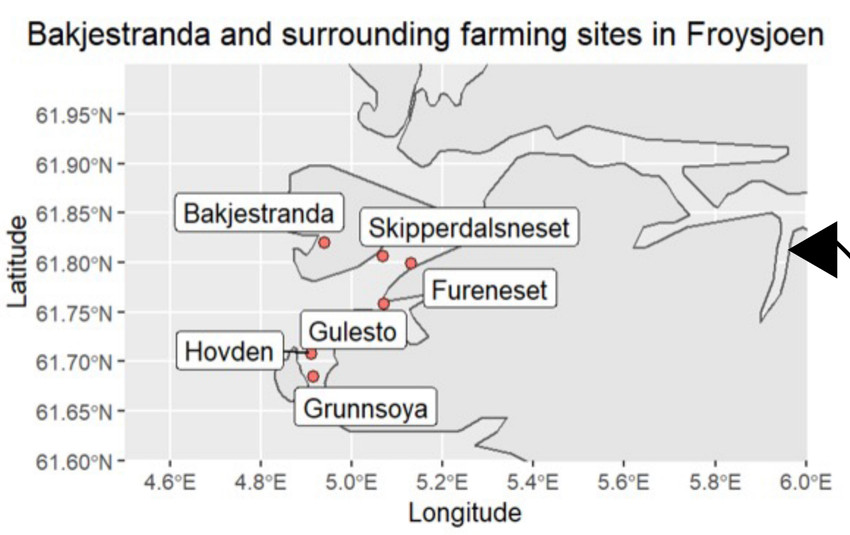


Figure 2: Map of bremanger and Kinn county, with close-by farming sites marked.

Materials and methods

Farmsite Bakjestranda, located in Frøysjøen

Weekly lice counts in situ that are collected by farmers, reported to Norwegian foodsafety authorities and published in the online portal BarentsWatch.

The programming software R v.3.4.1 for processing datasets and generating figures

Results

Comparing the winter season of 2021 to the spring season of 2022 with similar average temperatures, it shows the largest variation in lice numbers regardless of said similar temperatures

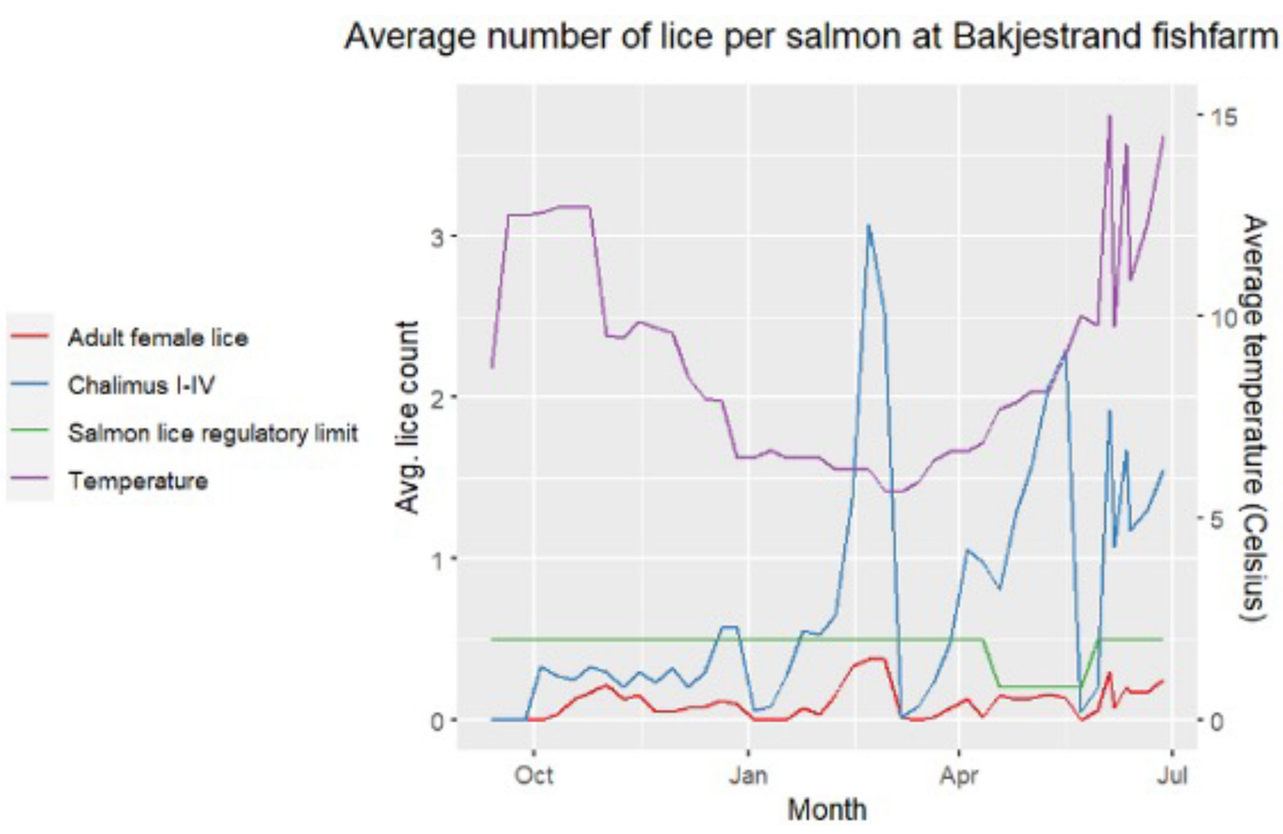
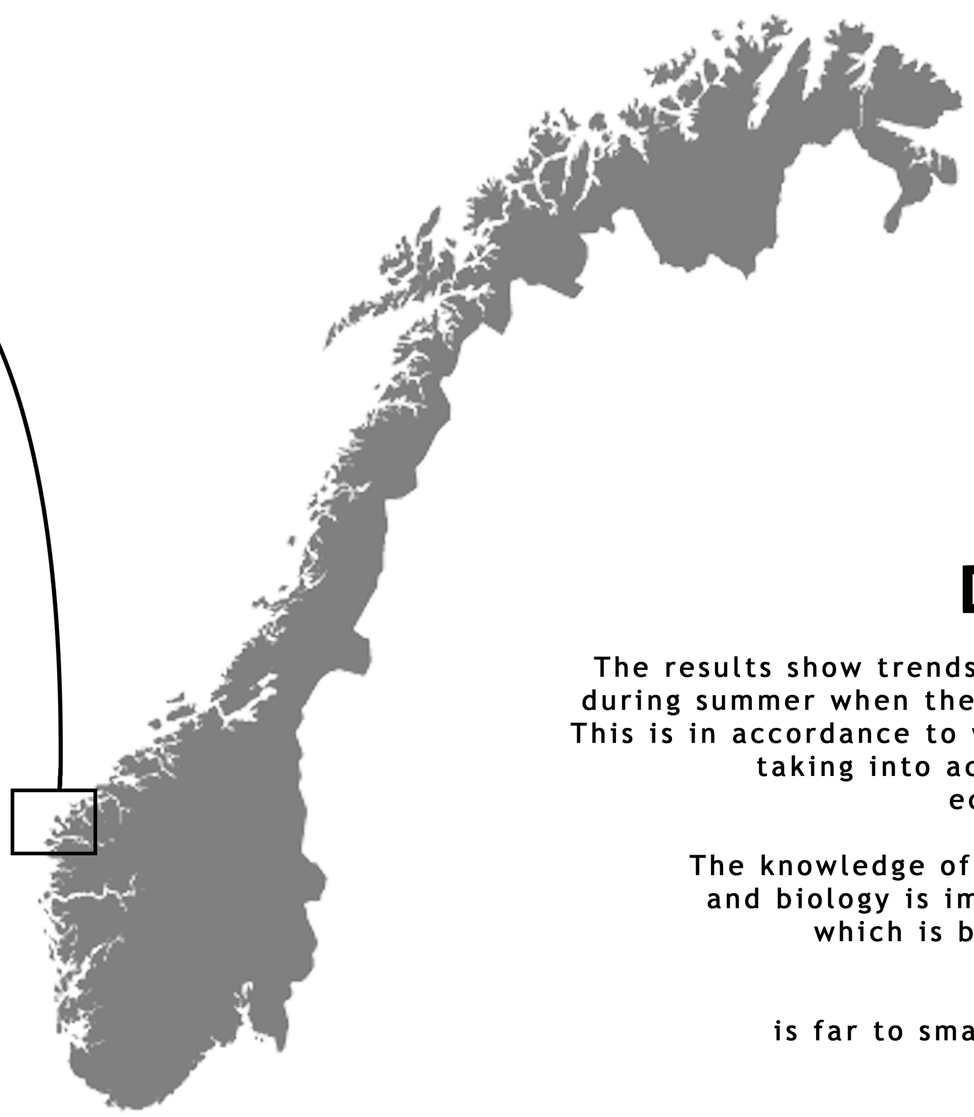


Figure 3: The figure shows the average number of lice per fish for Bakjestranda fish farm over the course of one production cycle spanning 2021-2022. The green and red line respectively show the average numbers of the two lice stages, adult female lice and chalimus I-IV. The blue line illustrates the regulatory limit for the average allowed number of female adult lice. The purple line illustrates the weekly temperatures reported

The average number of sea lice per salmon does not seem to have exceptionally strong correlations with the average temperature at the time



Discussion

The results show trends of higher lice numbers during summer when the sea temperature rises. This is in accordance to what we would suspect, taking into account what is known of ectoparasitic life cycles.

The knowledge of salmon lice prevalence and biology is important for an industry which is being strictly regulated.

The reach of the study is far to small draw any conclusions