HOW HAS THE USE OF CLEANER FISH IN NORWEGIAN SALMON FARMING CHANGED SEASONALLY AND GEOGRAFICALLY OVER A FIVE-YEAR PERIOD?

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AUTHORS

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OBJECTIVE

This study investigates seasonal and geographic patterns in **cleaner fish usage** across Norwegian salmon farming regions between **2019** and **2023**.

By combining datasets on monthly cleaner fish releases and salmonid biomass across six key farming counties; **Rogaland and Agder, Vestland, Møre og Romsdal, Trøndelag, Nordland,** and **Troms og Finnmark**, this analysis seeks to identify temporal and spatial trends in cleaner fish use.

METHODOLOGY

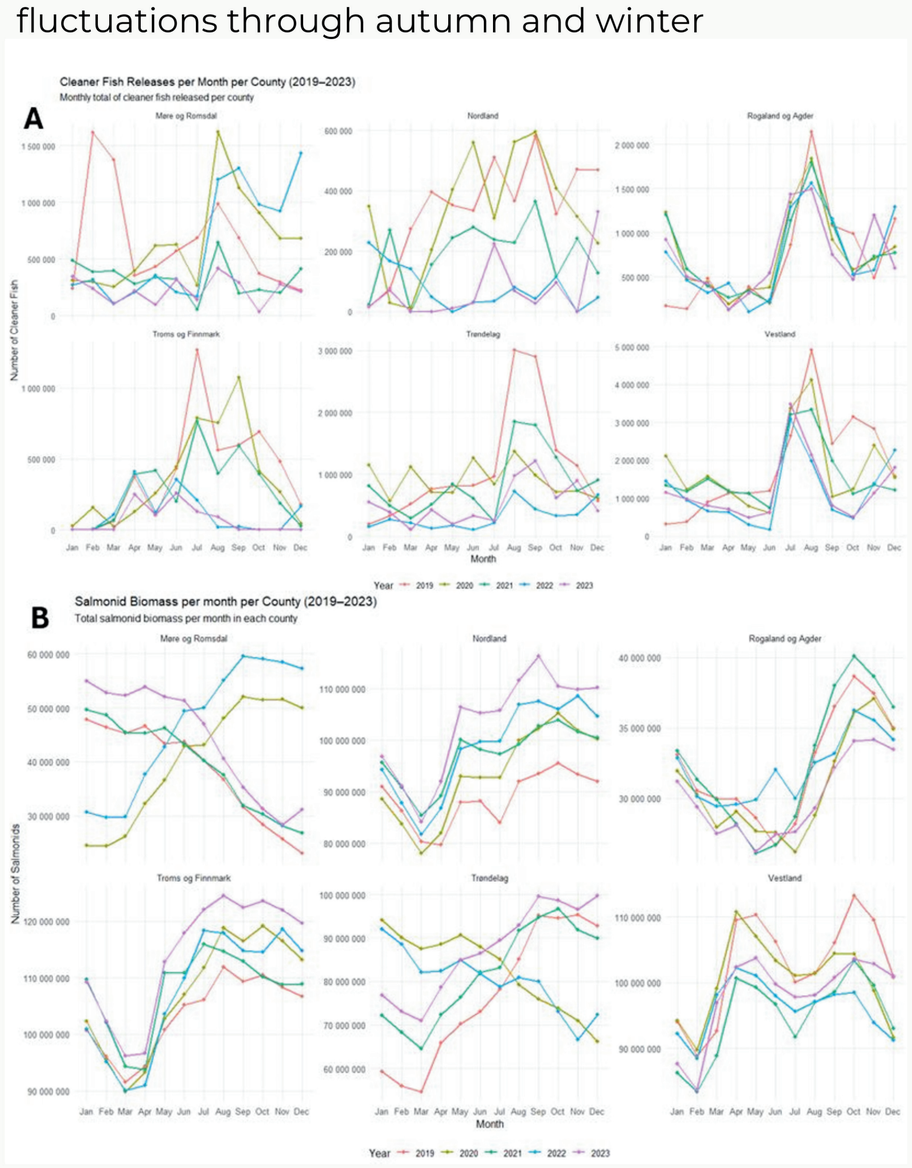
The first dataset reports the **weekly number of cleaner fish released** at each salmon farming site per region.

The other dataset provides the **total amount of salmon biomass** per site, which was aggregated by region to evaluate the **relationship** between salmon biomass and cleaner fish use.

RESULTS

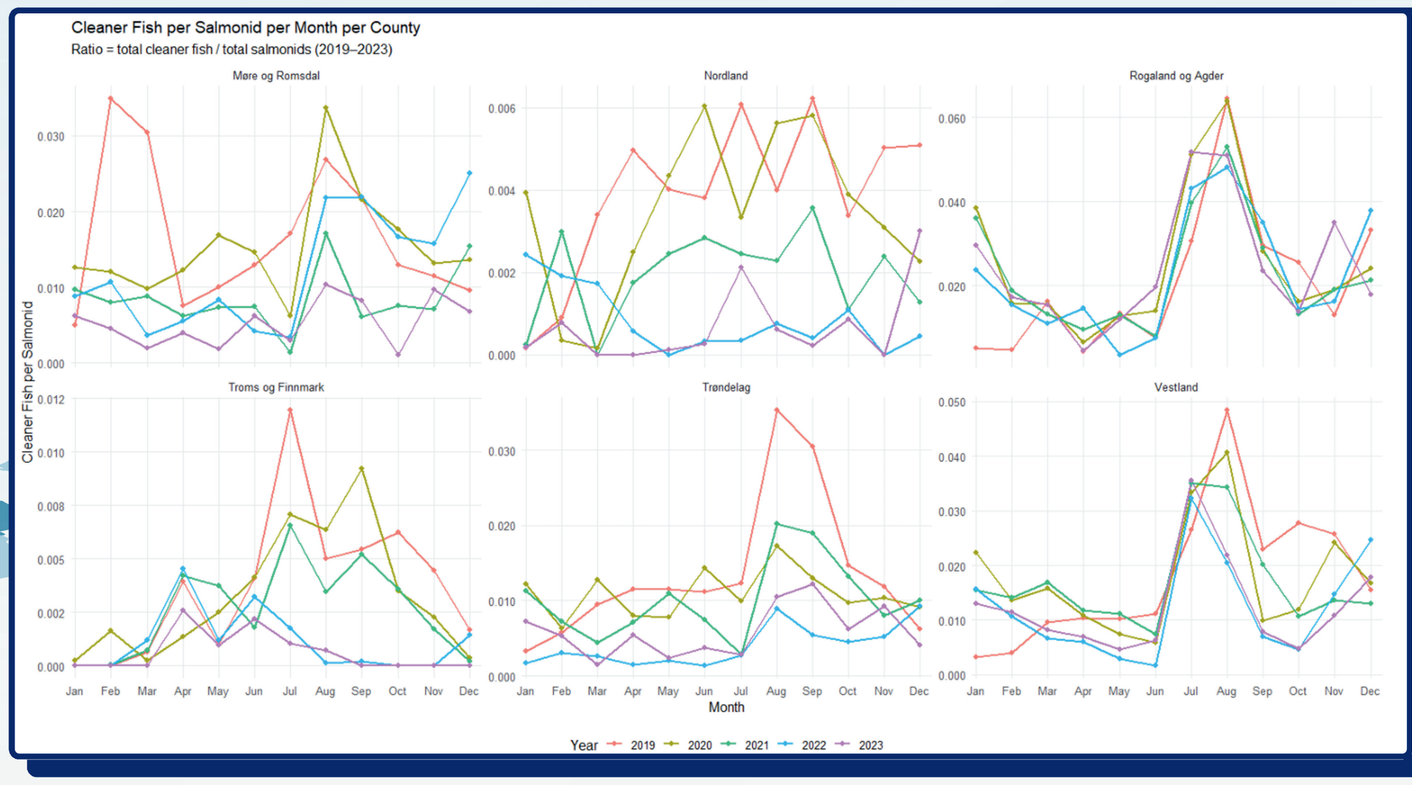
- Across all counties, cleaner fish releases exhibited clear **seasonal variations**
- Monthly totals were generally *lowest* during the **winter months** and *highest* between **June** and **August**
- The summer peaks decreased steadily from 2019 to 2023 in all counties

- Salmonid biomass followed more gradual and **consistent monthly changes** compared to cleaner fish releases
- Most counties showed a *moderate rise* in biomass from early spring toward midsummer, followed by smaller fluctuations through autumn and winter



CONCLUSION

- These findings suggest that cleaner fish use in Norwegian aquaculture remains strongly **seasonal** and **regionally** differentiated, with a gradual **decline** in usage intensity over time
- The results highlight ongoing transitions in lice management strategies toward more sustainable and welfare-oriented practices



- The ratio curves generally followed the seasonal shapes observed for cleaner fish releases, with clear **annual peaks** occurring during **mid-summer** in all counties
- The relative height of these peaks declined between 2019 and 2023 in every region, reflecting **lower monthly ratios over time**

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